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Anatomical Sciences Education invites you to submit your next paper to www.ASEjournal.com

**ASE** is the American Association of Anatomists’ new academic journal published in cooperation with the American Association of Clinical Anatomists and the Human Anatomy & Physiology Society.

ASE offers an international forum for the exchange of ideas, opinions, innovations and research on topics related to education in the anatomical sciences of **gross anatomy**, **embryology**, **histology** and **neuroscience**, including:

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College of Medicine

The editorial team includes leaders in the field of anatomical sciences education and professional educators with particular expertise in assessing the effectiveness of educational programs.
February 8, 2011

Dear Conference Attendees:

Welcome to Victoria and Camosun College!

I’m so pleased to welcome the 25th annual Human Anatomy and Physiology 2011 Conference to the beautiful West Coast of British Columbia.

As the largest and most diverse college on Vancouver Island, Camosun College is proud to host this professional development gathering of science and health educators. We are an institution that prides itself on attention to excellence and innovation.

I’m told that the content and speaker line-up will make for a highly engaging conference (and I can see from the creative skeleton motifs on past conference materials that you are highly engaging people!). In my experience, these are key ingredients in the recipe for success.

So, too, is the location of a conference. If you haven’t been to Vancouver Island before, you’re in for a treat! We’re proud of our “skookum” West Coast living and learning lifestyle, and hope that you take the time to sample the many wonderful opportunities that Victoria and Vancouver Island offer our visitors and residents.

Please accept my very best wishes for a fascinating, exciting, and productive conference.

Sincerely,

Kathryn Laurin
President
EXPERIENCE + INNOVATION
Helping teachers and students succeed together

Principles of Anatomy and Physiology, 13th Edition
Gerard J. Tortora and Bryan H. Derrickson
978-0-470-56510-0, 2012

Principles of Human Anatomy, 12th Edition
Gerard J. Tortora and Mark Nielsen
978-0-470-56705-0, 2011

Visualizing Anatomy and Physiology
Craig Freudenrich and Gerard J. Tortora
978-0-470-49124-9, 2011

Atlas of Human Anatomy
Mark Nielsen and Shawn D. Miller
978-0-470-50145-0, 2011

Real Anatomy Software DVD
Mark Nielsen and Shawn D. Miller
978-0-470-11483-4, 2008

Laboratory Manual for Anatomy and Physiology, 4th Edition
Connie Allen and Valerie Harper
978-0-470-59890-0, 2011

WILEY
Welcome to Victoria

Welcome to the 25th Annual Conference of the Human Anatomy and Physiology Society. The theme for the conference, “Get Current,” follows the tradition of professional development that is so much a part of your HAPS membership. From update sessions presented by experts in their fields to workshops presented by your HAPS colleagues you will be able to learn new things that will help you achieve excellence in the teaching of Anatomy and Physiology.

HAPS is an organization of over 1600 members that share your devotion to teaching. Make sure you find time to renew your collegial relationships and make new ones. You are part of an incredible network of educators that can be there for you throughout the year. And our presence here in Canada underlines the international flavor of our organization.

You are visiting an incredible part of the world and I hope you will take advantage of the cultural and educational opportunities that abound. From the classic and world famous Empress Hotel you will be at the center of this beautiful city. Your conference committee has worked tirelessly to provide you with the best experience possible, both at the conference and in the community.

As your Executive Director I add my personal welcome to our conference. I hope you will seek me out so that I can continue to meet our outstanding members. As always, I want to hear how we are doing in service to the membership and hope you will tell me how we can do more for you.

Learn Discover Share

Dr. Laurence Spraggs
Executive Director
Human Anatomy and Physiology Society
Greetings from the Mayor of Victoria

On behalf of the City of Victoria, I am pleased to welcome all the delegates to the 25th Annual Human Anatomy and Physiology Conference.

The work of your society - from training, education, to information sharing - is vital to the health and safety of every community. I commend you on your ongoing dedication.

Victoria is a truly wonderful city. I hope that while you are here you can take some time to explore our thriving downtown, our unique communities, and the stunning natural beauty all around us.

Most importantly, I hope you have the opportunity to connect with the local citizens – it is the friendly and welcoming people which make Victoria so special.

It is a true honour to host your conference. I wish you all a wonderful time.

Sincerely,

[Signature]

Dean Fortin
MAYOR
The Human Anatomy & Physiology Society (HAPS) was founded in 1989, after three successful national conferences promoting communication among teachers of human anatomy and physiology at the college level. HAPS is an organization of Human Anatomy & Physiology instructors who strive for excellence in undergraduate instruction in Anatomy & Physiology. Increased growth of the Society necessitated securing an Executive Director and an organizational management firm to assist in the day-to-day administration of HAPS. However, HAPS remains primarily a volunteer organization.

The Board of Directors makes the final policy decisions that steer the organization, but most of the work of HAPS is accomplished by the committees. All of these people (including the Conference Planning Committee) are unpaid volunteers. A variety of HAPS committees will hold meetings over the lunch hour on the first day of workshops (Tuesday, May 31). A complete list of committees and their lunch-time meeting locations will be included in your registration packet. We encourage you to attend the meeting of any committee that interests you so you may discover first-hand how HAPS works and how you can get involved.

Board of Directors

President: Caryl Tickner
Past-President: John Waters
President-Elect: Don Kelly
Secretary: Wanda Hargroder
Treasurer: Elizabeth Becker
Central Regional Director: Pat Bowne
Eastern Regional Director: Amy Way
Southern Regional Director: Craig Clifford
Western Regional Director: Anne Geller

Executive Director: Laurence Spraggs

A current list of Board members can be found at: http://www.hapsweb.org/displayboard.cfm
**HAPS Presidents & Conference Coordinators**

**Past Presidents**
- Richard Steadman, 1989-1990
- Virginia Rivers, 1991-1992
- Gary Johnson, 1992-1993
- Sandra Grabowski, 1993-1994
- Wayne Carley, 1994-1995
- Robert Antony, 1995-1996
- Karen LaFleur-Stewart, 1996-1997
- Kevin Patton, 1997-1998
- Steve Trautwein, 1998-1999
- Christine Martin, 1999-2000
- Henry Ruschin, 2000-2001
- William Perrotti, 2001-2002
- Michael Glasgow, 2002-2003
- Philip Tate, 2003-2004
- Sandra Lewis, 2004-2005
- Frederic Martini, 2005-2006
- Margaret Weck, 2007-2008
- Kevin Petti, 2008-2009
- John Waters, 2009-2010

**Current President**
- Caryl Tickner, 2010-2011

**President Elect**
- Don Kelly, 2011-2012

**Previous HAPS Conferences**
- 1989 – Reno, NV (Virginia Rivers)
- 1990 – Madison, WI (Gary Johnson)
- 1991 – Greenville, SC (Karen LaFleur-Stewart)
- 1992 – San Diego, CA (Shirley Mulcahy)
- 1993 – Beaumont, TX (Wayne Carley)
- 1994 – Portsmouth, NN (Pam Langley)
- 1995 – St. Louis, MO (Kevin Patton)
- 1996 – Portland, OR (John Martin)
- 1997 – Toronto, ON, Canada (Henry Ruschin)
- 1998 – Fort Worth, TX (Theresa Page)
- 1999 – Baltimore, MD (Robert Smoes)
- 2000 – Charlotte, NC (Nishi Bryska)
- 2001 – Maui, HI (Frederic Martini)
- 2002 – Phoenix, AZ (Philip Tate)
- 2003 – Philadelphia, PA (Lakshmi Atchison)
- 2004 – Calgary, AB, Canada (Izak Paul)
- 2005 – St. Louis, MO (Margaret Weck)
- 2006 – Austin, TX (Mary Lou Percy)
- 2007 – San Diego, CA (Kevin Petti)
- 2008 – New Orleans, LA (Judy Venuti)
- 2009 – Baltimore, MD (Ellen Lathrop-Davis)
- 2010 – Denver, CO (Terry Harrison)

**This Year**
- 2011 – Victoria, BC, Canada (Peggy Hunter)

**Coming Attractions**
- 2012 – Tulsa, OK (Karen McMahon)
- 2013 – Las Vegas, NV (Kebret Kebede)
HAPS Committees
2010-2011 Committee Chairs

HAPS has a number of committees, dealing with a wide variety of topics within the Society. Below is the chair and a brief description of each committee. Look for them throughout the conference and learn more about what HAPS has to offer (First-Timers will be seeking them out as part of the Scavenger Hunt).

**Animal Use Committee**
*Nick Despo*

We are charged with developing, reviewing, and recommending policies and position statements on the use of animals in college-level A&P instruction.

**Annual Conference Committee**
*Izak Paul*

We actively encourage HAPS members to consider hosting an Annual Conference. We provide advice and assistance to members who are considering hosting an annual conference.

**Cadaver Use Committee**
*Leslie Day*

We engage in issues pertinent to development and maintenance of cadaver labs for undergraduate and graduate programs as well as development of questionnaires to provide information for HAPS members.

**Executive Committee**
*Caryl Tickner*

We are comprised of the top administrators of HAPS, setting policies and governance of the Society.

**Curriculum & Instruction Committee**
*Ron Gerrits*

We develop and/or compile resources that are useful for teaching A&P. Recent and ongoing projects include the development of learning outcomes and compilations of a list of useful software and websites. Future projects will include compiling teaching activities to help meet the outcomes.

**Foundation Oversight Committee**
*Valerie O’Loughlin*

We establish and manage endowed funds for the Society, oversee the activities and operations of the HAPS Foundation, and advise the HAPS Board of Directors on prudent and proper investment of Foundation money. We also publicize the Foundation and solicit funding.
HAPS Committees
2010-2011 Committee Chairs... continued

Grants & Scholarships Committee
Michael Kopenits
We administer the HAPS Grants and Scholarship Program, encouraging HAPS members and their students to apply for grants and awards offered by the Society.

HAPS-EDucator Committee
Marsha Sousa
We create the quarterly online publication, the HAPS-EDucator. Committee members solicit articles about teaching or other relevant topics, edit, proofread, and determine what new content might be of benefit to our members.

HAPS-Institute Committee
Ellen Arnestad
We organize short graduate courses and other continuing professional education opportunities for HAPS members.

Nominating Committee
Don Kelly
We assemble a list of qualified candidates for election to the HAPS Board of Directors.

Marketing Committee
Gary Johnson & Javni Mody
We create and sustain relationships between HAPS and scientific and publishing exhibitors.

Membership Committee
Elizabeth Hodgson & Elizabeth Pennefather-O’Brien
We work to increase HAPS general membership by maintaining ties with current members, creating awareness of HAPS’ value, and introducing HAPS to potential members.

Presidents-Emeriti Advisory Board
Kevin Petti
We are comprised of past presidents of HAPS, providing advice and a historical perspective to the Board of Directors upon request.

Regional Conference Committee
Ewa Gorski
We promote one- and two-day conferences in localized areas. We have updated a RC Guide to be used in the design and setup of future regional conferences.
HAPS Committees
2010-2011 Committee Chairs... continued

Safety Committee
Karen McMahon & Linda Nichols

We promote laboratory safety awareness in the A&P laboratory. We continue to revise and update the HAPS Safety Guidelines and are preparing a collection of case studies about A&P laboratory safety for publication.

Testing Committee
Curtis DeFriez & Eric Sun

We develop, maintain, and manage the HAPS comprehensive exam. We are working on developing an online exam and aligning the exam to the student learning outcomes established by the C&I Committee.

Web Committee
Tom Lancraft

We edit the HAPS web components (site and Wikis) as well as providing resources for teaching with technology.

Steering Committee
Tom Lehman

We provide communication among the various committees of HAPS and enhance the ability of the committees to collaborate in furthering the aims of the Society.

Many of the committees will have meetings during the annual conference, as well as presenting posters with information about their activities and projects. The annual conference is a great opportunity to learn more about this aspect of HAPS. Come see what we’re about!
Welcome to the Fifth SEASON of HAPS Institute!

HAPS Institute offers participants the opportunity to explore a variety of concepts at a deeper level and in a variety of flexible formats tailored to the busy schedule of working A&P professors.

HAPS-I focuses on concepts that are hard to understand, hard to learn, and hard to teach. Our short courses include both subject-specific content as well as practical teaching and learning methodology. And each course gives you the opportunity to publish in a peer-reviewed compendium of teaching resources.

Participants who successfully complete HAPS-I courses earn graduate biology credit through the University of Washington.

Four 2-hour credit courses are coordinated with this Annual Conference!

- Advanced Cardiovascular Physiology Part II: Vascular Physiology and Cardiovascular Integration
- Advances in Anatomy and Physiology
- Concepts in Human Embryology
- Molecular and Cellular Basis of Human Disease

Participants in all HAPS-I courses produce a teaching module (for example, a case study or problem set) that is peer-reviewed and possibly published in a professional, peer-reviewed online publication.

Everyone registered for a HAPS-I course receives specific information on required sessions to attend at this meeting.

Why would you want to participate in HAPS-I courses?

Because you want to . . .

- Become a more effective teacher
- Brush up on a particular topic
- Get documented credit for your experience
- Gain access to expert faculty, presenters, and top-notch resources
- Strengthen your credentials in teaching A&P
- Improve chances for funding travel to a HAPS Conference
- Show students that you care about learning
- Learn new ways to teach the topics of A&P
- Enjoy the opportunity to contribute to a peer-reviewed publication
You have a lot of questions, don’t you?

Great! The HAPS-I staff is anxious to talk to you about our current offerings and future plans. This is YOUR professional development program, so please help us to make sure that we are meeting your needs!

There’s also plenty of information about HAPS Institute on the HAPS website at www.hapsweb.org

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University of Washington at Seattle (UW)
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- Morton Publishing Co.
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- Zoologik ® Foundation
Travel Information
HAPS 2011 Conference

Air Travel

There is no official carrier for HAPS 2011. International and domestic flights fly from across North America into and out of Victoria International Airport (YYJ). If you are flying via Seattle and are feeling adventurous, it is possible to get to/from Victoria via floatplane or passenger ferry. The latter will require additional planning.

**Floatplane option**

It is possible to fly to Seattle by international or domestic carrier and then arrange travel to Victoria by floatplane. Floatplanes depart from Seattle’s King County International airport OR from Lake Union in downtown Seattle (Kenmore Air). The floatplane ride is approximately 40 minutes and delivers you directly to downtown Victoria.

**Ferry option**

It is also possible to travel from Seattle to Victoria by passenger ferry (Clipper Vacations). The ferry ride is approximately 3 hours and delivers you directly to downtown Victoria.

Airporter Express Shuttle

The Airporter Express Shuttle bus leaves the Victoria International airport every ½ hour and delivers passengers to/from hotels in downtown Victoria. Tickets may be purchased near the baggage claim area at Victoria International Airport. The cost is $20 per person (one way) and the trip takes approximately 40 minutes.

Airport Taxi Services

Taxis may be hired directly outside the baggage claim area at Victoria International Airport. The exclusive taxi company serving the airport is Yellow Cab. A cab ride to downtown Victoria is approximately 35 km (17 miles) and will cost approximately $60 (one way).
Public Transit to / from the airport

Public transit buses do not serve the airport directly. A 20 minute walk from the arrivals terminal will however, get you to Bay 1 at the McTavish Park n Ride Station where you can catch the #22 bus. This bus travels directly to / from the downtown area at a cost of $2.50 per person (one way).

Public Transit to / from Camosun College

HAPS will be providing bus transport to and from the College on the workshop days. If however, you prefer the flexibility of public transit, the route between Camosun College and the Conference Centre is serviced by several buses. Camosun College is just a 20 minute bus ride (no transfers) from the Conference Centre. The #7 bus travels directly between the conference centre and Camosun College. Buses depart every 10-15 minutes.

Travelling around Victoria by public transit is safe, environmentally friendly and economical. Several other bus routes service Camosun College. Check out the BC Transit web site for additional maps, route information and schedules.
HAPS 25th Annual Conference
May 28 – June 2, 2011
Schedule of Events

Friday, 27 May
Fairmont Empress Hotel

5:00 PM - 8:00 PM (17:00 – 20:00) *
Executive Committee Meeting: Buckingham Room

Saturday, 28 May
Fairmont Empress Hotel

9:00 AM – 12:00 PM
Board of Directors: Empress Library

9:00 AM – 5:00 PM (9:00 – 17:00)
Exhibitor Set-up: Carson Hall

12:00 PM – 6:00 PM (12:00 – 18:00)
Registration: outside the Lecture Theatre

12:00 PM – 1:30 PM (12:00 – 13:30)
Board of Directors and Steering Committee Luncheon: Sidney Room

1:30 PM – 4:00 PM (13:30 – 16:00)
Board of Directors and Steering Committee Meeting
Sidney Room

4:30 PM – 5:30 PM (16:30 – 17:30)
HAPS Institute Course Orientation: Saanich Room
(registered course participants only)

8:00 PM – 10:00 PM (20:00 – 22:00)
Welcome Reception: Crystal Ballroom
Sponsored in part by McGraw-Hill
Registration will be open during the welcome reception

Sunday, 29 May
Victoria Conference Centre

7:00 AM – 1 PM (7:00 – 13:00)
Registration: outside the Lecture Theatre
7:30 AM – 8:30 AM  First-timers' Breakfast: Crystal Ballroom
Sponsored in part by ADInstruments

7:30 AM – 8:30 AM  Continental Breakfast: Carson Hall
(for all other attendees)

7:30 AM – 5:15 PM  (7:30 – 17:15)  Exhibits – Carson Hall
Posters available

8:45 AM – 9:00 AM  Welcome and Opening Remarks: Lecture Theatre

9:00 AM – 10:15 AM  Update Seminar I: Lecture Theatre
Dr. Virginia Brooks, Oregon Health Sciences University
Sponsored by the American Physiology Society
“Brain Insulin: a Sweet Deal for Normal Baroreflex Function”

10:15 AM – 10:45 AM  Refreshment Break & Exhibits: Carson Hall
Posters – (Presenters available to discuss their posters)

10:45 AM – 12:00 PM  Update Seminar II: Lecture Theatre
Dr. Brad Nelson, PhD, Trev and Joyce Deeley Research Centre
“Toward Personalized Immunotherapy of Cancer”

12:00 PM – 2:00 PM  Lunch on your own
(12:00 – 14:00)

2:00 PM – 3:15 PM  (14:00 – 15:15)  Update Seminar III: Lecture Theatre
Dr. Bayla Schecter, BSc, MDCM, AAFP, Vancouver Island Health Authority
“Balancing the Brain: Neurobiology in Health and Disease”

Posters, (presenters available to discuss their posters)

3:30 PM – 4:45 PM  (15:30 – 16:45)  Update Seminar IV: Lecture Theatre
Dr. Caroline Harwood, PhD, The University of Washington
“Life in the Lung: How Bacteria can Maintain an Infection in a
Compromised Host”

5:00 PM – 6:30 PM  (17:00 – 18:30)  Meet the HAPS Committee Chairs
Bengal Lounge, Fairmont Empress Hotel
Pre-museum cocktail hour sponsored by Pearson

6:30 PM – 9:30 PM  (18:30 – 21:30)  Museum Visit and Tapas at the Royal British Columbia Museum
(located across from hotel in walking distance)
Monday, 30 May
Victoria Conference Centre
(connected to hotel)

7:30 AM – 8:30 AM  Continental Breakfast: Carson Hall

8:00 AM – 1:00 PM  Registration: outside the Lecture Theatre
(8:00 – 13:00)

7:30 AM – 5:15 PM  Exhibits: Carson Hall
(7:30 – 17:15)

8:30 AM – 10:00 AM  HAPS Annual Membership Meeting: Lecture Theatre

10:00 AM – 10:30 AM  Refreshment Break & Exhibits: Carson Hall
Poster sessions, (presenters available to discuss their posters)

10:30 AM – 11:45 AM  Update Seminar V: Lecture Theatre
Dr. Ben Sporer, Physiologist, Canadian Sport Centre Pacific
“Use of the “Warm Up” to Optimize the Physiological State for Performance: Linking the Science to Application in High Performance Sport”

11:45 AM – 1:45 PM  Lunch on your own
(11:45 – 13:45)

1:45 PM – 3:00 PM  Update Seminar VI: Lecture Theatre
Dr. Wayne Vogl, University of British Columbia, Vancouver, BC
Sponsored by the American Association of Anatomists
“Of Whales and Men”

3:00 PM – 4:00 PM  Refreshment Break & Exhibits: Carson Hall
Poster sessions available
(15:00 – 16:00)

4:00 PM – 5:00 PM  Exhibits and door prizes: Carson Hall
(16:00 – 17:00)

6:00 PM – 7:00 PM  Pre-banquet Happy Hour: Crystal Ballroom
(included with your banquet ticket)
Sponsored in part by John Wiley & Sons
(18:00 – 19:00)

7:00 PM – 11:00 PM  Banquet, Keynote Speaker and Band/Music: Crystal Ballroom
Dr. E. Paul Zehr, PhD
“Bones, Brains, and Batman.”
(19:00 – 23:00)
Tuesday, 31 May
Camosun College, Victoria

7:00 AM – 8:30 AM  Transportation to College
                   Breakfast is on your own

9:00 AM – 9:15 AM  Welcome to Camosun College

9:30 AM – 12:15 PM Workshops

12:15 PM – 1:45 PM Lunch
             Sponsored in part by Pearson
             Committee Meetings
             Optional guided walk and picnic lunch

1:45 PM – 4:15 PM  Workshops

4:00 PM

Wednesday, 1 June
Camosun College, Victoria, Canada

7:00 AM – 8:30 AM  Transportation to Camosun College
                   Breakfast is on your own

9:15 AM – 12:00 PM Workshops

12:00 PM – 1:30 PM Lunch
               Sponsored in part by ADInstruments
               Optional guided walk and picnic lunch

1:30 PM – 4:00 PM  Workshops

4:00 PM

Thursday, 2 June
Optional Day Trip – Butchart Gardens, Victoria

9:00 AM  Buses load for Butchart Gardens
          Fairmont Empress Hotel

3:00 PM  Buses return to Fairmont Empress Hotel
          From Butchart Gardens

From Butchart Gardens
Balancing the Brain: Neurobiology in Health and Disease

Bayla Schecter

Mental Health and Addictions
Vancouver Island Health Authority
Victoria, BC

Abstract

This lecture focuses on the brain's internal communication: how it functions normally and how that function is affected by substances of abuse and mental health disorders. In particular, the relationships between substances of abuse, mental health disorders and the pharmacological treatment of mental health and substance abuse disorders will be presented. The neurotransmitters dopamine and serotonin, as well as the recently discovered endocannabinoid signalling molecules anandamide (AEA) and 2-arachidonoylglycerol (2-AG), will be used as the examples of neurotransmission. Depression and schizophrenia will be examined as examples of mental health disorders. Finally, the effects on brain communication of marijuana and alcohol, important agents of substance abuse, will be discussed.

Dr. Bayla Schecter has worked in addiction medicine for 23 years. She has been the Regional Medical Advisor for Mental Health and Addictions, Vancouver Island Health Authority for 15 years. She is also a consultant in addiction medicine to other branches of the Ministry of Health of British Columbia, including the Interior Health Authority and the Northern Health Authority. Her training includes B.Sc., First Class Honours in experimental psychology, and M.D.C.M. both from McGill University in Montreal. She also received her specialty certification in family practice from the American Academy of Family Practice. She has had further training in psychotherapy, clinical hypnotherapy and stress management. She had an extensive career as a family physician, both in rural and urban communities, stopping that career in 2002 to do addiction medicine full time. Her love of teaching has manifested itself throughout her career. She has extensive experience in giving workshops and lectures in addiction medicine and other aspects of medicine to both professionals and the public. As part of her teaching she has provided material pertinent to addiction medicine for clients and for professionals working with clients, including the medical effects of addictive substances on the body and the neurobiology of addiction. Her publications include two educational DVDs, made for the Vancouver Island Health Authority: “Mental Health, Medications and Substance Use” in 2005 and “How to Recognize Acute Intoxication and Acute and Post Acute Withdrawal from Substance Use” in 2008.

Presentation Time: 2:00 PM Sunday, May 29th, 2011
Use of the “Warm Up” to Optimize the Physiological State for Performance: Linking the Science to Application in High Performance Sport

Ben Sporer

Canadian Sport Centre Pacific
Victoria, Canada
Faculty of Medicine
University of British Columbia
Vancouver, BC

Abstract

Across sports athletes warm up in an attempt to prime the body for activity and in turn optimize performance. Without adequate warm up athletes are generally considered to be ill-prepared and/or more prone to injury. Surprisingly however, there is little published work evaluating strategies used in elite sport and often the procedures implemented depend on previous experiences of the athlete or coach rather than scientific evidence.

In many ways, the warm up is just that – “a warm up”. Most of the benefits associated with warm up are heat related and are a direct effect of increased activity of the muscle resulting in increased heat production. It is widely accepted that increases in muscle temperature result in a greater compliance of muscles and joints, enhanced dissociation of oxygen from haemoglobin and myoglobin, and increases in anaerobic metabolism, enhanced contractile performance of skeletal muscle, and nerve conduction rate. As muscle and core temperature rise with increased activity, the physiological systems of the athlete become more ready for exercise. What is less clear, however, is the optimization of timing, duration, and intensity needed for improved sport performance. Additionally, sport environments present challenges that are usually controlled for in laboratory settings. Variable environmental temperatures and logistical challenges such as competition, weather, and injury delays make optimal timing of warm ups difficult. In hot environments excessive warm up can negatively affect performance due to increased thermal strain and excess fatigue. In winter sports, negative effects on performance following inadequate or inappropriate warm up are likely to be amplified given the exposure of athletes to sub-zero temperatures. Cooling of the muscle below normal temperature negatively impacts muscle performance.

From 2005-2010 we undertook a series of projects aimed at evaluating warm up strategies used in select sports in Canada in preparation for the 2008 and 2010 Olympics. The objectives of these projects were to i) identify current practices, ii) evaluate their effectiveness based on our current physiological understanding, and iii) identify areas of opportunity to enhance performance. The information presented in this symposium will highlight our findings and provide insights into strategies for optimizing warm ups in competitive sport.
Dr. Ben Sporer is a physiologist responsible for overseeing the Performance Preparation division at Canadian Sport Centre Pacific. In addition, he works with the Canadian Cycling, Snowboard and Triathlon teams and was the Sport Science and Medicine Support Team lead for Snowboard at the 2010 Olympic Winter Games. A graduate of the University of British Columbia (PhD) and the University of Victoria (MSc, BSc), Ben currently holds adjunct appointments at both the Universities of British Columbia and Victoria. He has held teaching appointments in the areas of exercise physiology, exercise prescription, and health. His areas of interest include asthma and exercise, performance optimization, athlete monitoring, and exercising in extreme environments. Presentation Title: Use of the “warm up” to optimize the physiological state for performance: Linking the science to application in high performance sport.

Presentation Time: 10:30 AM Monday, May 30th, 2011
**Update Speaker 3**

*Toward Personalized Immunotherapy of Cancer*

**Brad Nelson**

Trev and Joyce Deeley Research Centre
BC Cancer Agency
Victoria, BC

**Abstract**

Over the past decade, it has become increasingly clear that the immune system strongly influences clinical outcomes in human cancer. This is best documented by studies of tumour-infiltrating lymphocytes (TIL), which are present in a significant proportion of solid tumours. TIL consist of activated, clonally expanded populations of T cells and B cells that infiltrate stromal and epithelial regions of the tumour. TIL presumably arise through spontaneous recognition of abnormal gene products expressed by the tumour. In a broad range of cancers, TIL are associated with favourable responses to treatment as well as increased patient survival, strongly suggesting TIL can mediate anti-tumour activity. The most important TIL subsets underlying this activity are CD8+ T cells and CD20+ B cells. Other prominent cell types include CD4+ helper T cells and FOXP3+ regulatory (suppressor) T cells, although their association with patient survival remains incompletely understood. With better understanding of TIL, including their functional properties, mechanism of action, and interaction with standard treatments, it may be possible to enhance TIL activity through vaccination or immune-modulation, thereby engaging host immunity to further improve cancer outcomes.

Dr. Nelson is a native of Vancouver BC. He received a B.Sc. from the University of British Columbia in 1987 and a Ph.D. from the University of California at Berkeley in 1991. He completed postdoctoral training and held faculty positions at the Fred Hutchinson Cancer Research Center and University of Washington in Seattle, before moving his lab to the Benaroya Research Institute in Seattle in 1997. In July 2003, he became the founding Director of the BC Cancer Agency’s Deeley Research Centre in Victoria BC. He is an Associate Professor of Medical Genetics at the University of British Columbia and holds adjunct appointments in the Departments of Biology and Biochemistry/Microbiology at the University of Victoria. Dr. Nelson’s lab studies the immune response to cancer, with an emphasis on ovarian, breast and lymphoid cancers. His team is developing a clinical trials program that will investigate the use of immune-based strategies for the treatment of cancer.

Presentation Time: 10:45 AM Sunday, May 29th, 2011
Life in the Lung: How Bacteria Can Maintain an Infection in a Compromised Host

Carrie Harwood

Department of Microbiology
University of Washington
Seattle, WA

Abstract

Cystic fibrosis (CF) is a devastating genetic disease that is characterized by chronic lung infections. The bacterium Pseudomonas aeruginosa tends to infect CF patients when they are young children and persists throughout their lives. Why P. aeruginosa? What characteristics does it have that allow it to adapt to live in the CF lung? I will describe and discuss some of these characteristics, including antibiotic resistance, biofilm formation and microaerobic growth. In addition, the CF lung provides unique nutritional opportunities for P. aeruginosa.

Caroline S. Harwood is the in Microbiology at the University of Washington in Seattle. She is studies diverse aspects of bacterial physiology, including biofilm formation by Pseudomonas aeruginosa, microaerobic growth of microorganisms, microbial communication, and comparative genomics of bacteria. She is a recipient of the Procter & Gamble Award in Applied and Environmental Microbiology (2010), and an elected member of the Washington State Academy of Sciences (2010) and National Academy of Sciences (2009). She is also a fellow of the American Association for the Advancement of Science (AAAS) (2008) and the American Academy of Microbiology (2000).
Abstract

Whales, dolphins and porpoises have acquired many anatomical and physiological features for life in the water. Among these is a unique pattern of supplying blood to the central nervous system and in one subgroup, the roqual whales, a distinct method of feeding.

In vertebrates, the brain and spinal cord are supplied mainly by the internal carotid arteries and branches from intersegmentally arranged arteries respectively. In cetaceans, a much different pattern occurs. Here, all blood destined for the central nervous system passes through a massive plexus of arteries (rete mirabile) that occurs in fascial planes of the thorax, neck, and lumbar region. The system extends into the vertebral canal, where it gives rise to vessels that supply the spinal cord, and then forward into the cranial cavity where branches supply the brain. The retia generally consist of small poorly innervated muscular arteries with distinct internal and external elastic laminae, embedded in fatty connective tissue containing few veins. Although retia in other mammals are counter-current with veins and are thermoregulatory, the function of the rete mirabile in the Cetacea is not entirely clear, although the system is more extensive in ‘better’ divers. The most popular hypothesis is that the rete mirabile functions to maintain a constant perfusion pressure to the central nervous system during diving in the face of a dramatic drop in heart rate.

Roqual whales have developed a method of feeding that is unique to this group. This method of feeding, termed ‘lunge-feeding’, involves moving towards a mass of prey and then opening the mouth so that the lower jaw moves almost 90 degrees to the closed position and the oral cavity engulfs a huge bolus of water. Then the mouth is closed and prey objects are collected as water is filtered through the baleen. Among adaptations for this mechanism of feeding are the absence of synovial joints between the temporal bones and the mandibular condyles, and lack of fusion between the two mandibular bones at the symphysis. The temporomandibular joints each consist of a massive ligament. The mental symphysis contains a unique structure that we suspect not only allows movement but also may serve as a mechanoreceptor. When the mouth opens, the mandibular condyles move laterally and externally rotate to increase the dimensions of the opening to the oral cavity. At the same time, the ends of the mandible externally rotate at the symphysis and the angle between the bones increases. The presence of ligamentous temporomandibular joints and a flexible symphysis enable these animals to dramatically increasing the dimensions between the manibular bones when the mouth is opened and resist enormous forces at the joints when lunging.
Association of Anatomists in 2009. Major research field is in the area of cell biology of the male reproductive tract, although he has a long-standing interest in blood supply to the central nervous system in the Cetacea and is currently participating in studies of jaw function in lunge-feeding whales. He has authored over 80 peer reviewed publications. Lecturer in Gross Anatomy since his appointment at UBC, directed the Gross Anatomy program at UBC from 1992 to 2002, and from 2004 to 2008. Received the Teaching Excellence Award seven times from the UBC Medical Undergraduate Society, the Basmajian/Williams and Wilkins Award from the American Association of Anatomists in 1988, the University Teaching Prize from the University of British Columbia in 1992, the Killam Teaching Prize in 2006, and the J.C.B. Grant Senior Scientist Award in 2006. He is a co-author of “Gray’s Anatomy for Students”, Gray’s Atlas of Anatomy, Dorland’s Gray’s Pocket Atlas of Anatomy, and Gray’s Anatomy for Student’s Flash Cards.
Abstract

Knowledge of the extraordinary complexity of the brain and the homeostatic regulation of its multiple functions is ever-increasing. One case in point is a current core interest of the Brooks lab, the baroreceptor reflex: the key short-acting blood pressure regulatory mechanism. A negative-feedback control mechanism, the baroreflex consists of several links, beginning with the baroreceptors imbedded in the aortic arch and the carotid sinus, three neuronal relays within the brainstem, and then finally the sympathetic and parasympathetic nervous systems, which innervate the effectors, the heart and blood vessels. Many conditions, as diverse as pregnancy to obesity, impair baroreflex function. This is a problem, since baroreflex impairment can lead to instability in blood pressure levels, which can cause orthostatic hypotension and even organ damage. We have directed our most recent efforts towards understanding the underlying mechanisms. Our work has revealed an improbable candidate, the pancreatic hormone, insulin, as a key participant. While insulin is best known for stimulating glucose uptake in skeletal muscle and liver, it also can enter the brain by active transport across the relatively impervious capillary blood-brain barrier. Once in the brain, insulin binds to specific receptors in multiple but discrete sites to influence many bodily functions, from suppression of appetite to memory improvement. The purpose of my lecture will be to highlight another important central role for this ubiquitous hormone: support of the baroreflex. I will discuss where in the brain insulin initiates this action and what goes wrong in insulin resistant conditions like pregnancy and obesity, when brain insulin levels fall. Ultimately, my goal is to convince you that our brains require insulin for optimal baroreflex function.

Ginny Brooks hails from Michigan, where she received her BS in Chemistry (Oakland University, 1972), her certificate in medical technology (St. Joseph Mercy Hospital, 1974), and her Ph.D. in Physiology (The University of Michigan, 1978). She then spent 5+ fruitful postdoctoral years in San Francisco under the tutelage of Dr. Ian Reid, UCSF, where she studied brain control of blood pressure, a topic that continues to be a focus of her lab. In 1984, she accepted a position in the Department of Physiology, Oregon Health & Science University and rose to the rank of Professor in 1997. Her service work has included membership on several committees of the American Physiological Society, including the Education Committee, membership on national (NIH and AHA) and international grant review committees, membership on the Editorial Board of four journals, and most recently, as a member of the Faculty of 1000. Another passion is teaching, for which she has won multiple honors, including in three instances the Allan J. Hill, Jr. Basic Science Teaching Award, which is awarded by each graduating medical student class to one basic science professor. She is particularly proud of the receipt of a Fulbright Senior Scholarship, which was based on both her research and teaching achievements, and allowed her to spend seven spectacular sabbatical months in Sydney, Australia. In Sydney (when she was not at the beach), she joined forces with an international superstar, Professor Roger Dampney, to further expand her knowledge of hypothalamic control of the cardiovascular system and to participate for the first time in problem-based learning.
Dr. Paul Zehr
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“Bones, Brains, and Batman”

E. Paul Zehr, PhD, is professor of neuroscience and kinesiology at the University of Victoria in British Columbia. He is an internationally distinguished biomedical scientist with a research program focused on the neural control of movement and recovery of walking after stroke. He has a tremendous passion for the popularization of science and is involved in numerous outreach activities beyond the Ivory Tower. His recent pop-sci books include “Becoming Batman: The Possibility of a Superhero (2008)” and “Inventing Iron Man: The Possibility of a Human Machine (2011)”. He has written for YES Magazine: the Science Magazine for Kids, and Flipside: The Science, Engineering, and Technology Magazine for Teenagers. Paul is also a regular speaker at conferences and comic book conventions, including the San Diego International Comic-Con which draws over 100,000 fans annually. He has been interviewed and contributed to articles on exercise, training, and superheroes in Scientific American Online, Men’s Health, Men’s Fitness, Maxim, and Popular Mechanics magazines. Paul has also been featured on National Public Radio in the USA, CBC Radio’s National Science Show “Quirks and Quarks” in Canada, CTV’s “Canada AM”, CBC TV’s “The National”, and CITY TV “Breakfast Television”.

BANQUET KEYNOTE SPEAKER
NOTES:
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POSTER PRESENTATION LISTING

A. M. Agur
University of Toronto (Toronto, Ontario, Canada)
Co-Author: N. Ravichandiran (University of Toronto)
Development of a learning module for thoracic imaging with anatomical/clinical correlation

Computer-assisted learning is an effective supplement to traditional teaching of medical imaging. A review of existing programs and the literature indicates that user requirements for computer-assisted learning include a multimedia format, interactive learning, and relation of imaging to anatomy and pathology. The purpose of this study is: (1) to develop a computer based learning module to assist medical students in understanding basic imaging of the thorax, and (2) to assess the effectiveness of this learning module with first-year medical students. The module was designed using Adobe Flash. The module relates thoracic imaging to anatomical sections of cadaveric specimens, and includes examples of pathology. Content includes radiology, computed tomography and magnetic resonance imaging of the thorax. Didactic textual content, images, animations and opportunities for user interaction were integrated. A questionnaire to assess ease of use and learning value was developed for a cohort of first-year medical students, who assessed the module by answering the questionnaire and giving verbal feedback. User evaluation was positive, with strong recommendation to include such modules in the curriculum.

H. Bustamante
University of Colorado (Boulder, Colorado, United States of America)
Co-Authors: T. Foley, F. Bentley, K. Semsar, and W. Byrnes (University of Colorado)
How human physiology students value and use learning goals

Although the development of learning goals has been well received by our faculty at the University of Colorado, many question the value of sharing such goals with their students. To gather evidence on how students value and use learning goals, we administered an online survey to physiology students in one of our upper-divisions courses: Human Physiology II (n=153). Course-specific learning goals were provided to the students through an online course management tool at the start of the term. In addition, teaching faculty in the Human Physiology II course repeatedly exposed their students to the goals during lecture. All students were surveyed immediately after the first exam. Results were categorized and analyzed by three independent scorers, and inter-rater agreement for each question averaged 91.8%. Preliminary results suggest that students highly value learning goals, regardless of their prior emphasis by faculty. Students primarily use learning goals to focus on what to study, organize the lecture material, and self-test. Results from this survey will be used to develop an “instruction manual” for the learning goals that will help faculty understand how students perceive and use the goals, and will help students understand the faculty’s expectations for that course. The Science Education Initiative at the University of Colorado provided funding for this project.

J. Carnegie
University of Ottawa (Ottawa, Ontario, Canada)
Use of an online learning tool to help physiology students construct well-organized answers to short-answer questions

Students need practice in developing well-structured answers to short-answer questions (SAQs) that ask them to link physiological concepts as they demonstrate their understanding of the regulation of body function. Quandary™, an innovative action maze software developed at the University of Victoria, was used to create two interactive online exercises to help students build, step-by-step, answers to questions dealing with: (1) the regulation of metabolic rate by thyroid hormone, and, (2) the control of blood sugar by insulin. Each exercise began with an SAQ that incorporated an endocrine dysfunction (autoimmune hyperthyroidism or diabetic ketoacidosis). Students were then prompted to answer six multiple choice questions (MCQs) in order to build their answer to the SAQ. The MCQ distracters included not only incorrect physiological information, but also extraneous facts pertaining to the thyroid gland or endocrine
pancreas as well as pieces of information that were being proposed to be included far too early in the answer. Students were provided with instructive feedback for each answer chosen, were penalized for fundamentally incorrect answer choices, and were prompted to try again whenever a wrong answer was selected. The final MCQ of each exercise allowed students to see an orderly summary of the components of a good answer. Students enrolled in an undergraduate physiology course were given one week to complete and submit each exercise. While the exercises contributed only 2% to their final grade, compliance was high with 91% of students completing each one on time. Preliminary data comparing (mean + SEM) performance on the endocrine SAQ portion of the summative exam between the current student population (69.4 + 2.14%, n = 147) and those from the previous academic year (63.0 + 2.50%, n = 73) reveals a trend toward improved ability (p < 0.07) to answer SAQs with access to the online learning tool.

O. Carter
Ohio University (Ironton, Ohio, United States of America)
Co-Author: R. Brennan (Ohio University)

Using cognitive response and anxiety measures in students to conceptualize physiological function

Exposure to particulate negative ions and subsequent physiological mood enhancement may affect cognitive performance in student populations and suggests a role in modulating circulating levels of serotonin. In order to facilitate a conceptualized understanding of cardio and endocrine integration, pre-nursing laboratory and lecture investigations were performed which included monitoring an accurate net output of negative ions during pre and post-testing of cognitive function and circulating physiological levels of serotonin in volunteer students. Students hypothesized that increasing negative ion concentrations in test subjects would result in better oxygenation of blood, and improved mental recall with a corresponding calming effect due to decreased circulation levels of serotonin. Students investigated alterations in mood through analyzing serotonin metabolite (5-HIAA) levels in urine (ELISA), blood pressure, breathing rate, pulse oximeter, recorded alterations in brain activity via EEG (α, β, and ζ waves, iWorx Physiology) and measured stress and cognitive function and reaction times (RBANS, BAI and word recalls tests). The class correlated measures to a dose-dependent exposure of atmospheric particulate ions (representing inside, outdoors and rushing waterfalls levels of negative ions) in a controlled environment using a research grade ionizer (Elanra Air4Health Therapeutic Ionizer) and humidifier. This approach demonstrated improvement in comprehension of the subject matter as classmates contributed to ownership of the project with a high level of interest in outcomes. Analyses of data (blind coded) included repeated-measures ANOVA (within-subject, between-subject comparisons) and appropriate post hoc analyses as needed. Thus, we obtained data which addressed important questions for health practitioners on fitness and mental function in a meaningful and engaging manner that enhanced learning.

V. Chiriac
Durham College (Oshawa, Ontario, Canada)

A tool for distance educators

Present instructional efforts increasingly rely on using distance education (DE) modalities to better serve the student population. As such, entire academic teams are faced with the stringent need to adapt not only to new delivery methods, but also to new pedagogical realities, sometimes in a relatively short interval. Hence, institutional changes, which emphasize a move from in – class activities to online courses, generated a request for a simple tool that could be used by any new DE mediator when establishing their own educational methodology. The present endeavour is based on ideas obtained not only through literature research, but also through individual work and direct dialogue with faculty specifically involved in the distributive delivery of Anatomy, Physiology and interconnected subjects. The current poster thus consolidates theory and practice into a developmental model, an instrument easily employable by anyone interested in personal growth as a distance educator, with direct applicability to the online facilitation of Human Anatomy and Physiology courses.

continued on next page
J. R. Cronmiller
Monroe Community College (Rochester, New York, United States of America)

A prospective blinded cross-over study assessing the effectiveness of the mini-case study method in teaching human physiology

The mini-case study teaching technique is a short descriptive scenario consisting of a few paragraphs. Our mini-cases dealt with real-life scenarios that covered concepts taught in Human Physiology. It also included questions about the scenario answered by students using information taught in the classroom. Students in three sections of Human Physiology taught by one instructor (investigator) in the Fall of 2010 were used to assess the effectiveness of mini-case studies as a supplemental teaching method. There were 25 students per section (total 75). Students in all sections received the same information about a topic using standard teaching methodology. Students in select arms also received a mini-case study of topics. During the first seven weeks of the semester the evening section received mini-case studies (Arm I a) and two day sections did not (Arm II a). The arms were switched-over after seven weeks of the semester. During the last seven weeks of the semester the two day sections received mini-case studies (Arm II b) and the evening section did not (Arm I b). Students were blinded to the teaching methodology. Exam questions were developed to compare the understanding of a study topic by students in the different arms. Students receiving mini-case studies were enthusiastic and actively participated in group discussions in answering questions. Students who received mini-case studies had a higher percentage of correct answers in 70.8% of questions (P < .01 in 25% of these) pertaining to study topics versus 16.7% for arms not receiving mini-case studies. The percent of correct answers was the same between the arms for 12% of the questions. Mini-case studies reinforce information, provide a different perspective on a topic and a practical application to physiologic concepts. The mini-case study method is an effective supplement to the teaching of Human Physiology.

N. Despo
Thiel College (Greenville, Pennsylvania, United States of America)

HAPS Animal Use Committee

Animal use committee survey update

The Animal Use Committee will present the most recent results of a continuing yearly survey of members regarding: 1) types of animals used in teaching human anatomy and physiology, 2) familiarity with HAPS position statement on animal use, 3) institutional published statements regarding use of animals in teaching, and 4) top ten reasons for using animals for teaching human anatomy and physiology. The poster will also serve as a survey site for data collection as well as a distribution point for Animal Use Committee materials (HAPS position statement on animal use and Emergency Response Plan).

C. A. Gaul
University of Victoria (Victoria, British Columbia, Canada)

Co-Authors: G. Mulligan and N. Taylor (University of Victoria)

A cross-disciplinary undergraduate laboratory experience: Connecting Analytical Chemistry with Exercise Physiology through the study of thermoregulation and sweat analysis

Cross-disciplinary (CD) learning enhances student understanding by offering opportunities to explore topics from the perspectives of alternate fields of study and is typically reserved for graduate level studies. This project involved the design and implementation of an undergraduate health-sciences related laboratory experience in which concepts and students from two distinct disciplines (chemistry and exercise physiology) combined to study the mutual topic of exercise thermoregulation and sweat analysis. Twenty-eight senior BSc Kinesiology (EPHE) students and 42 senior BSc Chemistry (CHEM) students participated in this laboratory as part of their mutually exclusive, respective courses. The effectiveness of this laboratory environment was evaluated using written comments collected from all students as well as from formal focus groups conducted one month following the CD laboratory with a representative cohort from each class (CHEM n=16; EPHE n= 9) with the CHEM and EPHE focus groups held separately. Data analysis followed transcription of focus groups transcripts using an open coding strategy. Coding topics were generated and used to develop five themes which were found to be consistent for both continued on next page
groups of students. These themes reflected the common student perceptions that the CD laboratory 1) stimulated their interest in this area of physiology, 2) provided insight into practical applications of the laboratory techniques they had learned previously within their respective discipline, 3) offered opportunity to understand their course curriculum from another perspective, 4) allowed for valuable interactions with students from another discipline. A fifth theme reflected challenges faced when working in a CD environment. The results indicate this CD thermoregulation-sweat analysis laboratory offered a positive learning environment and increased student engagement in health sciences related studies at the undergraduate level. This type of laboratory has the potential to be an effective curriculum design to improve undergraduate student experiences of learning in a Health sciences laboratory setting.

D. Giedrimiene  
Saint Joseph College (West Hartford, Connecticut, United States of America)  
Enhancing critical thinking in anatomy and physiology teaching
Critical thinking is essential to understand science and to apply it in practical settings appropriately. Students, who will become professionals in health care or other medicine or science fields must learn how to actualize goals and how to apply obtained information. Biology education, including Anatomy and Physiology (A&P) teaching, has been criticized for emphasizing mindless memorization over analytical and creative science. Practice in critical thinking prompts thoughtful examination of the role of the science in society. A good starting point in the development of critical thinking skills is use of practical examples or problem-based cases meaningful to the student. Adding problem-based learning (PBL) component to A&P studies may significantly enhance the active learning process and to improve critical thinking skills. During small group work, the instructor can circulate among the groups and suggest directions for student discussion. Short lectures (15-20 minutes) are excellent for inspiring students and for demonstrating how to solve problems. Active learning is always superior to the mimetic learning environment in which students listen to lecturer, take notes, and usually try to repeat what they have been told. Problem-solving process is not a simple process of reading and memorization, but it is a logical thinking, which is challenging intellectually. Learning from case-based problems requires to synthesize the new material with previous knowledge, allowing the students to update and expand their existing skills. Further, PBL may also increase students’ creativity and self-motivation. A problem-based approach facilitates the development of collaborative skills by the student without limiting their individuality. Our experiences have shown that PBL greatly improved students’ study and accelerated their performance. Hopefully, PBL enhancement of A&P studies will lead to a new design of laboratory activities and engage the learner in more classroom discussions.

J. A. C. K. Jayawardena  
University of Peradeniya (Peradeniya, Sri Lanka)  
Co-Authors: T. N. Hewapathirana and S. Bannaheka (University of Peradeniya)  
Approaches to learning during first year and their correlation to academic performance in anatomy among Sri Lankan dental students
Acquisition of knowledge depends on a students’ learning approach. Two different approaches to learning, deep approach (DA) and surface approach (SA), have been distinguished. This study aimed 1) to identify the learning approaches of first year dental students, and 2) to see the relationship of them with academic performances in anatomy and with the GPA (Grade Point Average) value obtained at the 1st BDS examination. This study was conducted among 2 batches of students who were in the first year in 2006 or 2010 in the University of Peradeniya. Students’ learning approaches were identified using “revised two-factor study process questionnaire: R-SPQ-2F” and their DA and SA scores were calculated according to Biggs et al., (2001). Examination marks of different components of anatomy and the GPA of the first BDS examination were correlated with students’ SA and DA scores using Pearson correlation. 62 and 73 students of 2006 and 2010 batches, respectively, completed the questionnaire. 109 (80.74%) students showed a greater DA score than their SA score (Group X). A greater SA score than their DA score were found in 21 (15.56%) students (Group Y). DA and SA scores were equal in 5 students. Mean values of students’ DA and SA scores were 31.2±6.8 and 22.9± 5.5, respectively. DA score did not
show a significant correlation with any of the examination marks. However, SA score showed a negative correlation with practical marks \((r=-0.2, p=0.01)\) and final aggregate \((r=-0.2, p=0.047)\). In addition, the mean values of all examination marks of the X group were higher than that of the Y group. Our results indicated that first year dental students use both deep and surface learning approaches but a greater trust on the deep approach. A better academic performance could be guaranteed among students who believe in deep approach than surface approach.

K. Kerr
Troy University (Montgomery, Alabama, United States of America)
Starting a human cadaver lab program
Starting a human cadaver program can seem daunting. Using a human cadaver instead of a cat or fetal pig in a human anatomy lab is the preferred method of teaching about the human body, but how do you get started? I found that starting a cadaver lab is really not as hard as one might think. A colleague and I did some research and visited several schools that use human cadavers. We began with one cadaver and have now added a second one after a year and a half. Student response has been positive and all has gone well.

T. Lehman
Coconino Community College (Flagstaff, Arizona, United States of America)
HAPS Steering Committee
Do you want to be more involved in HAPS?
Would you like to learn more about the committees within HAPS? There are nineteen (19) committees in HAPS, each focused on specific projects or directives within the Society. Many of the committees offer opportunities for you to become involved in projects that you may find very rewarding and enriching. You can help write policy statements for HAPS. You can gather data on testing. You can help write outcomes and mission statements. You can learn about practices and products to make the A&P lab safe for students and instructors. You can learn and share a lot about A&P with peers. This poster offers a few examples of committees and their works. You can also identify the Committee Chairs by their bulls-eye button. Even more, you can read about the committees in the conference program and online at http://www.hapsweb.org/displayboard.cfm . The HAPS Committees are a great place to learn more about the Society, develop your own skills as a professional, and help others grow as instructors. Join now.

A. H. Martin
Ross University (Roseau, Dominica, West Indies)
Student centered teaching methods, requirement for faculty involvement.
Students learn by a combination of methods which traditionally have been teacher driven. Student centered teaching and learning shifts the focus from the teacher to the learner and stresses learning by doing. At Ross University, during Anatomy laboratory, we utilize active learning and inductive teaching and learning. Students are presented with a challenge, dissection of a particular part of the human body, in conjunction with relevant clinical correlations which must be researched and discussed as a team. For the Gross Laboratory, the class is divided into three groups. In each group, 5-6 students are assigned per table and 6-7 tables are organized into one of four pods. Prior to the first practical, we noted that individual faculty interacted very differently during the dissection period. In pod one, faculty basically acted as resource answering questions when asked. In pods two and three, a similar approach was employed but with slightly more interaction during dissection. In pod 4, the faculty gave mini lectures on technique and content prior to every dissection and was very interactive during the dissection period. The aim of this study was to investigate whether the various teaching methods substantially advanced the student centered learning process. We recorded the average scores on four practical exams over two semesters for all students in the pods. Results clearly showed that the high and low average scores from all four pods differed by less than one percent, \((0.8)\). Additionally the average score from pod 1, with least faculty involvement, to pod 4, with most involvement, differed by 0.1 percent. The above results indicate that given proper guidance, a detailed dissection guide and direction to a list of clinical correlates to research and discuss, students will learn effectively with only minimal faculty involvement during the dissection period.
J. McFarland  
Edmonds Community College (Lynnwood, Washington, United States of America)  
Co-Author: J. Michael (Rush Medical College)  
**The core principles (big ideas) in physiology: Results of faculty surveys**  
Understanding core principles is important in physiology education. Physiology (A&P) faculty were surveyed regarding the core principles of physiology that they want their students to understand. Fifteen core principles were identified in the first survey and were rank ordered the second survey. We identified the top five core principles: cell-to-cell communication, cell membranes, flow down gradients, homeostasis and interdependence. “Flow down gradients” was then “unpacked” to yield the component ideas of which it is comprised and faculty commented on this unpacking in a third survey. We are using these survey responses to develop a physiology concept inventory.

K. A. McMahon  
University of Tulsa (Tulsa, Oklahoma, United States of America)  
HAPS Safety Committee  
**Best products and practices to promote safety in the human anatomy and physiology laboratory**  
The HAPS Safety Committee promotes safety in the A&P laboratory and has put together a list of the best products and practices for safety that every human A&P laboratory should have and follow. Products include: single-use lancets, nitrile gloves, eye wash station, lab aprons, fire blanket, coated hematocrit tubes, blood borne pathogen clean-up kit, scalpel blade remover, face shields, first aid kit (and what it should contain), and much more. This information is invaluable to both new A&P instructors and those who are interested in improving safety for both students and instructors in the human A&P laboratory.

P. S. Minhas  
University of Pittsburgh (Pittsburgh, Pennsylvania, United States of America)  
Co-Authors: L. Swanz and G. Arundhati (University of Pittsburgh)  
**The effects of pedagogical and andragogical learning on student performance and information retention in a physiology course**  
With the ever increasing number of students attending post-secondary institutions, greater importance is being placed on seeking educational strategies which maximize information retention and minimize time consumption. Pedagogy and Andragogy are two methods of education grounded in the ways of passive and active learning, respectively. Previous research has suggested that andragogy and pedagogy are not exclusive but rather represent opposite ends of the educational spectrum. An Animal Physiology course of 44 students was studied to determine the effects of student-led seminar (andragogical) and lecture (pedagogical). During the study the course was divided into two time periods, with the first half dedicated towards instructor-led lecturing, followed by a control survey in which the students rated the efficiency of pedagogical learning on a scale from 1 (strongly disagree) to 5 (strongly agree). During the second period, students engaged in andragogical learning via peer-led disease seminars. An experimental survey was administered to students using the same scale to determine student preference between the two teaching methods. Raw examination scores from both halves of the course were analyzed using Microsoft Excel, while statistical t-tests and chi-square tests were run using STATA 8 program software to analyze survey results. Before experiencing the student-led seminars, the students slightly agreed (Mean ± S.D. = 3.27±1.04) that the information was in fact easy to retain via pedagogy. The preference towards student-led seminar (andragogy) increased 15.2% (from Control Mean = 2.58 to Experimental Mean = 3.34) over the course of the study. The fact that students have greater preference for andragogical methods between the control and experimental may indicate that seminar-based learning is more student friendly than pedagogical methods such as instructor-led learning. Integration of both andragogical and pedagogical learning into undergraduate courses, therefore, may have greater benefit in terms student retention and performance.
J. M. Pattillo
Macon State College (Macon, Georgia, United States of America)
Using open-source software and hardware to create interactive anatomy and physiology models

The physical models used in anatomy and physiology labs bring hands-on experience to students learning the structure and function of the human body. While models show anatomical structure very well, most do not effectively illustrate physiological function. Computer animations and simulations give clear demonstrations of physiological processes, but these lack the tangible qualities of physical models. An ideal learning tool would combine the flexibility and interactivity of computer software with the three-dimensional aspects of physical models. In the past few years, a large, on-line community of engineers, scientists, artists, and enthusiasts have created a number of open-source software and hardware initiatives designed to allow non-experts to develop their own interactive electronics. Two particular efforts, the Arduino electronics prototyping platform (www.arduino.cc) and the Processing graphics programming language (www.processing.org) have exploded in popularity and support throughout the world. Though initially envisioned for interactive art and design projects, these tools have found widespread use in a wide variety of fields, including education. For this presentation, these tools were used to create two different interactive A&P models. The first is a skeleton equipped with motion sensors, and paired with software designed to help students learn the movements of joints and the actions of muscles. The second is a more detailed version of the well-known “balloon in a bottle” model of the lungs and pleural cavity. This model is equipped with sensors that help demonstrate the pressure changes during lung ventilation. The design, construction, and use of both models will be described.

B. L. Richmond
Galen College of Nursing (Cincinnati, Ohio, United States of America)
Enhanced student learning through use of population studies

The Women’s Health Initiative, a 15-year study funded by the National Institutes of Health and the Heart, Lung, and Blood Institute, has had a significant impact on women’s health care in the United States. This historical study examined the health of 161,800 post-menopausal women age 50-79 years in regard to hormone replacement therapy, dietary patterns, and calcium and vitamin D supplements in relation to prevention of heart disease, cancer, osteoporosis, and effect on cognitive skills. In spite of the tremendous significance of the Initiative, I find that very few of my anatomy and physiology students are aware of these highly significant clinical trials. To stimulate student interest in this Initiative, I prepared a questionnaire consisting of at least two questions relevant to each part of the study. The first question evaluated how informed individuals are about the study, and the second question assessed how individuals might respond if their own health was at risk or affected by the same health issues presented in the Initiative. My survey included over 100 students at Galen College of Nursing, professional health care providers and nursing faculty, and a third group of individuals whose profession is not related to health care. The results of the questionnaire (analyzed by age, sex, and profession) are reported here. Having successfully stimulated interest in the Initiative among students, I prepared a brief summary of each section of the Initiative to present to the students. The descriptive summaries and the result of the questionnaire are presented in this poster. The Women’s Health Initiative has emphasized to students (1) the importance of large clinical trials in providing improved health care, (2) new understanding of the influence of hormones and dietary factors in women’s health, and (3) the diversity of response to medical treatment among various individuals.

J. Robertson
Westminster College (New Wilmington, Pennsylvania, United States of America)
Integrating a public human anatomy exhibition into an anatomy and physiology course

Public exhibitions of human anatomy (e.g., “Body Worlds”; “Bodies: The Exhibition”) have in recent years become popular and successful. These traveling exhibits feature plastination-prepared human specimens, ranging from near complete cadavers to isolated organs. Displayed specimens are often prepared and presented in dramatic and imaginative “poses” – typically designed to highlight particular anatomical structures and relationships. One of the stated missions of these for-profit exhibitions is to facilitate public education about anatomy and human biology. Use of this resource was integrated into an Anatomy & Physiology course. A lab-period visit to an exhibition was timed to coincide with the study of the musculo-skeletal system. A specific, graded assignment was developed; outcomes for the exercise continued on next page
included reinforcing prior study of skeletal structure, introducing skeletal muscle anatomy, and facilitating understanding of functional relationships between bones and skeletal muscles. In the assignment, students were asked to locate and identify a set of specific skeletal muscles on exhibit displays. Using only the various exhibited specimens and their knowledge of bone structure, they were asked to: 1) identify the origin and insertion for each muscle, 2) describe the action of the muscle, and; 3) note the type of attachment of the muscle to the origin and insertion. After completion of their initial survey, students were allowed to use reference materials (textbooks, lab books, atlases) to evaluate and refine their information. Students were surveyed to assess their opinions of the educational value of the exhibition and the specific use of this resource in learning anatomy in the context of an A&P course.

N. Schmidt
Leeward Community College (Pearl City, Hawaii, United States of America)

**Online based human anatomy teaching and learning module as a tool to meet student learning outcomes**

A complete online based CourseCompass™ module was used to teach one semester long courses of human anatomy lab. The module was built using teaching tools, self-assessment tools, and assessment tools: weekly quizzes and two examinations. All self-study tools were accessible to students 24/7 by using Internet access on their own lap tops, net books, iPads, and smart phones; college lap tops with wi-fi Internet connection were provided for assessment tools. Teaching tools included list of organs/structures to study, and Practice Anatomy Lab™ 2.0 (PAL) by Pearson as a virtual anatomy study and practice tool. Two units were chosen as appropriate for one semester course: Anatomical Models and Fetal Pig Dissection. Self-assessment tools included non-graded self-study; self-review using labeled and unlabeled pictures of models with audio button to hear structure/organ pronunciation; multiple-choice self-quizzes on the same unlabeled pictures to practice the organs/structure identification; fill-in-the-blank self-quizzes for spelling practice. All quizzes could be taken multiple times allowing students to practice in the organs/structures identification and spelling. Assessments: weekly ten minute fill-in-the-blank quizzes (no sources allowed, spelling counted) were assigned in the beginning of each class on body system assigned for that week. Evaluative testing: midterm and final examination (format similar to quizzes). Assignment grades were posted on the same day in online grade book for students review. Statistical analysis of midterm and final examination grades were shown significant improvement in student learning outcomes for students who used module during the course. This approach was successfully used for face-to-face courses, but it can be used for hybrid and/or online course delivery.

C. Shuster
Madison Area Technical College (Madison, Wisconsin, United States of America)

Co-Author: E. Sun (Macon State College)

**A system for increasing student success in a traditional or online anatomy and physiology course**

A common dilemma that A&P students face is having to grasp a large amount of information in a relatively short period of time. This can become an insurmountable problem for students with weak backgrounds and poor organizational skills. This problem is exacerbated in an online environment where the course is often reduced to taped lecture presentations, reading assignments and assessment exercises. We are developing an online system which helps students organize the information and takes the teaching to them. The content is divided into modules typically seen in a two semester freshman level A&P course. Each module is made up of a number of teaching sessions. Through the use of animated screen casts which have the look and feel of a one-on-one tutoring session, the student is led through key concepts. The teaching sessions are followed by an initial assessment which evaluates their understanding of the concepts. Students that score poorly on the assessment are directed to a second level of engagement where the content is clearly organized in outline form and reviewed. The student is then provided with a second assessment opportunity. This learning system is focused on helping students learn A&P content and is not textbook specific. It can be used either as a pre-lecture/pre-lab activity, a post-lecture/post-lab review, or both. The following modules: An Introduction to Anatomy and Physiology and Homeostasis, The Cell, and The Skeletal System will be demonstrated at this poster presentation. Additional modules are being developed and future efforts will include collection of data on student success.
K. A. Starr  
Western Carolina University (Cullowhee, North Carolina, United States of America)  
**The effect of collaboration on quiz scores and students’ perceptions of group testing**

When students work collaboratively they learn through discussion that helps to clarify concepts and improve critical thinking skills. For first-year physical therapy (PT) students at Western Carolina University, collaboration is an integral part of the two semester human anatomy course. At the beginning of the course the instructor assigns all students to permanent small groups (4-5 students) based on their undergraduate majors and previous anatomy experience. Each group works as a dissection team and also completes 6 group lab exams and several group quizzes. At the end of each semester students evaluate other group members using a peer assessment tool. The peer assessment score constitutes 10% of the student’s course grade. To determine if collaboration can improve student performance, test scores on a 15 question multiple choice anatomy review quiz were compared for students working individually versus students working in groups. Similar results were obtained for students enrolled in the course in 2009 and 2010. Half the students (n = 27) completed the anatomy review quiz individually, while the other half (n = 27) completed the same quiz in their permanent groups. Based on composite test scores, groups performed significantly better (average 81%) than did individuals (average 62%). Students were also asked to complete surveys to determine their perceptions of group testing. Two focus groups composed of students enrolled in the course in 2009 were conducted to further understand how collaboration improves learning.

B. A. Stoos  
Mercy College of Ohio (Toledo, Ohio, United States of America)  
**Planning a Bachelor of Science in Human Biology curriculum sought to establish: Bonding, retention and student success**

Mercy College of Ohio is starting a pre-professional degree sought to prepare graduates to go on to medical school or other professional fields of medicine, graduate school for work as a research scientist or immediate employment as a science lab technician. Many students do not understand the expectations or career options that a pre-professional degree prepares them for. Students find the standard pre-professional science curriculum to be extremely challenging. The proposed curriculum addresses these issues by integrating opportunities for students to focus their expectations and understand their options from the time they start. The curriculum includes four classes dedicated to helping students bond to the science faculty, understand their options and be prepared for difficult class work. One of these four classes is required for the student each year of their program. The first class is ‘Student Success Strategies for Biology Majors’. The second year class is ‘Career topics for Biology Majors’ which includes shadowing opportunities. The third year course is ‘Service Learning’ which presents opportunities for students to contribute to real community needs in health or environmental related experiences. The fourth year course has a large research component, where students must complete 120 hours in a research laboratory. These courses identify and highlight experiences necessary for students to comprehend what they want to do with their future while giving them guidance to be successful. The opportunities provided in the course work are also experiences that graduates schools are looking for in their applicants. Integrating these opportunities throughout the curriculum aids student success and links them to future career pathways. This presentation will elaborate on the content within the four courses.

R. B. Tallitsch  
Augustana College (Rock Island, Illinois, United States of America)  
Co-Authors: K. Abdel-Malek, J. Krippell, A. Beck, P. Croll, S. Fenwick, K. Kelley, and B. Peters (Augustana College; Cyber-Anatomy Corporation)  
**The effects of computer-assisted instruction in teaching human anatomy: Preliminary results of an experimental study**

Learning information in a college-level Human Anatomy or combined Anatomy and Physiology (A & P) course requires students to utilize at least two different learning skills: (1) acquisition of a complex technical vocabulary and (2) the development of an ability to interpret and understand three-dimensional anatomical relationships. Studies have indicated that computer-assisted instruction (CAI) may improve overall learning and achievement scores in a variety of subject areas and age groups. Despite the proliferation of anatomical software products, little is known about their effect upon learning in continued on next page
undergraduate Human Anatomy and A & P courses. This three-year study seeks to determine whether or not CAI laboratory modules involving the Cyber-Anatomy™ program help to (1) increase students’ understanding and interpretation of 3D structural relationships, (2) increase student interest in Human Anatomy and A & P courses, and (3) increase the retention of anatomical information at the undergraduate level. Preliminary results (year two of a three-year study) indicate the following: (1) Students’ ability to interpret 3D structural relationships, as tested by the PVRT, improved significantly in students utilizing CAI (n=43, p<0.05) as compared to control subjects (n=137) at one of the two test institutions, while no significant difference was seen in students at the second test institution (CAI n=94, control n=102). (2) Comparison of students’ interest, both in first week and last week of class surveys, demonstrated a modest trend (not statistically significant) towards an increased student interest in the courses utilizing CAI as compared to courses not using CAI at both test institutions. (3) No significant improvement was seen between control and experimental data in students’ ability to retain essential material throughout the course, as indicated by a Test of Essential Material administered at the end of the respective courses at both test institutions (n=376).

G. U. Udo-Affah  
University of Calabar (Calabar, Cross River State, Nigeria)  
Co-Authors: C. I. Idika and C. C. Njoku (University of Calabar)  
Study of the age and sex distribution of keloids and hypertrophic scars in University of Calabar Teaching Hospital (UCTH) from 2001-2006  
Hypertrophic scars and Keloids have been seen to occur frequently among burns and accident patients. Keloids and hypertrophic scars result from excessive collagen deposition. They are dermal fibro proliferative disorders unique to humans and occur following trauma, inflammation, surgery, burns and sometimes it occurs spontaneously. Clinically, these scars can be disfiguring functionally and aesthetically or both. A retrospective study of patients with keloids and hypertrophic scars was carried out in University of Calabar Teaching Hospital (UCTH) using medical records of 41 patients that were diagnosed and/or treated. Sex, age, provisional diagnosis, manifestation and treatment procedures were extracted from their folders. The result of the study was statistically analyzed which revealed that keloids and hypertrophic scars increased with years and occur a little more in females than in the males (M:F ratio= 48.8%:51.2% ). The age range that was mostly affected were ages 15-45 years.

R. Walker  
University of Calgary (Calgary, Alberta, Canada)  
A new renal function laboratory exercise in human physiology  
Renal function is a major topic in our human physiology course. In years past, we have used both human subjects and animals (rats) in exercises designed to illustrate the renal response to volume expansion. With increasing concerns by ethics committees, and increasing animal costs, we modified these exercises so that human subjects or animals were not required. A new exercise was developed involving the use of simulated human urine and plasma samples. Students are given various solutions that simulate pre- and post-volume expansion urine and plasma and are expected to analyze these samples for Na+, protein, inulin and osmotic concentrations. They are also supplied with a data table indicating the type of fluid used in volume expansion (water or isotonic saline intake) and urine flow rates pre- and post-expansion. From these analyses and flow rates, they estimate GFR, Na+ clearance, osmotic clearance and free-water clearance. Students pool their data and, using statistical analysis, explain the renal mechanisms involved in the regulation of fluid volume as well as differences in the response to water vs. isotonic saline intake.

continued on next page
Effect of race, religion and religiosity on ability to overcome cadaver anxiety by undergraduate anatomy students

Few students are prepared emotionally for cadaver dissection in Gross Human Anatomy. The current study measured correlates of socio-demographic variables: Ethnicity (people of ‘Color’ vs. ‘White’ people); Religion (Christians vs. non-Christians); and Degree of Religiosity (High vs. Medium vs. Low) on emotional response to cadaver dissection at 4 time periods (before first cadaver dissection lab; immediately after first cadaver dissection lab; 6 weeks after first cadaver dissection lab; and 12 weeks after first cadaver dissection lab). In the first iteration of this study, ethnicity was significant in describing cadaver anxiety. Immediately after the first cadaver exposure, anxiety levels for all students increased. However, students of color remained anxious with cadaver dissections whereas white students returned to ‘normal’ (non-anxious) levels by 6 and 12 weeks post exposure. In the second iteration of this experiment ethnicity and religious affiliation were important predictors of cadaver anxiety. Non-Christians showed more anxiety than Christians for all 4 time periods. Within medium level religious students, students of color were more anxious than white people in all 4 time periods. These findings lead us to conclude that teaching gross anatomy to students from diverse populations, particularly those of non-Christian denominations, requires greater sensitivity to student discomfort with death and dying. This has special significance at Minnesota State University Moorhead where recruitment and retention of diverse student populations is a priority.
Come to our HAPpening events

Join us for our annual Pearson cocktail party
All conference attendees are welcome
Bengal Lounge, Fairmont Empress Hotel
Sunday, May 29, 5:00 PM - 6:30 PM

Drop by for fun, light snacks, and refreshments! Fill out a “Teaching Idea of the Year” entry form for your chance to win an iPod® Nano! The drawing for the winner will take place at the end of the cocktail party.

Attend the HAPS/Pearson museum event
Royal British Columbia Museum
Sunday, May 29, 6:30 PM - 9:30 PM

This event features a museum visit, tapas, and fun activities. Visit the HAPS website for more information and tickets.

Learn about MasteringA&P at the Pearson booth

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Come to our HAPpening booth

Meet our authors at the Pearson booth
Sunday, May 29, 7:30 AM – 8:30 AM

- Bob Tallitsch, *Human Anatomy, 7e*
- Mike Timmons, *Human Anatomy, 7e*
- Stephen Sarikas, *Laboratory Investigations in A&P, 2e*
- Bill Ober, *Visual A&P; Illustrator on all Martini titles*
- Claire Garrison, *Illustrator on all Martini titles*

Monday, May 30, 7:30 AM – 8:30 AM

- Katja Hoehn, *Human A&P, 8e; A&P, 4e*
- Dee Silverthorn, *Human Physiology: An Integrated Approach, 5e*
- Lori Garrett, *Get Ready for A&P, 2e*
- Ruth Heisler, *Practice Anatomy Lab™ 3.0*
- Nora Hebert, *Practice Anatomy Lab 3.0*
- Lori Smith, *PhysioEx™ 9.0*
- Drew Lokuta, *PhysioEx 9.0*

Participate in an art contest at the Pearson booth
Starts Sunday, May 29, 7:30 AM; Ends Monday, May 30, 4:00 PM

Please stop by to enter our annual art contest. Details and supplies will be provided at the booth. Your rendering of an anatomy or physiology concept could win you an Apple iPad™! The winner will be announced at 4:00 PM on Monday, May 30.

Lunch at Camosun College workshops
Tuesday, May 31, 12:15 PM – 1:45 PM

Lunch is sponsored in part by Pearson.
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*NOTE: workshops indicated with an asterisk are repeated on Wednesday
**WEDNESDAY (JUNE 1 / 2011) WORKSHOPS-AT-A-GLANCE**

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</tr>
<tr>
<td>509 (F200) Engage generation me</td>
<td>609* (F206) Help make sense of physiol.</td>
<td>709* (F206) Strip and arrow diagrams</td>
<td>809* (F200) Cell phone use in class</td>
</tr>
<tr>
<td>510 (F202) POGIL (inquiry based learn )</td>
<td>610* (F302) Problem based learn in Nepal</td>
<td>710* (F302) Learning project (diabetes)</td>
<td>810* (F202) Face transplants</td>
</tr>
<tr>
<td>511 (F212) Incorporate science research</td>
<td>611 (F306) Forensic microscopy in A&amp;P</td>
<td>711* (F212) Using Clickers in classroom</td>
<td>811 (F214) Problem based A &amp; P studies</td>
</tr>
<tr>
<td>512* (F214) Biology concept inventories</td>
<td>612 (F200) Advanced use of PowerPoint</td>
<td>712* (F214) Expectations &amp; feedback</td>
<td></td>
</tr>
<tr>
<td>613 (F216) Clay sculpting 3D anatomy II</td>
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<tr>
<td>614* (F212) Inquiry based hands-on</td>
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</tbody>
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*NOTE: workshops indicated with an asterisk are repeated on Tuesday*
## WORKSHOP SESSION LISTING

### WORKSHOPS

### TUESDAY WORKSHOP SCHEDULE MAY 31 / 2011

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Workshop Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome to Camosun College</td>
<td>9:00am – 9:15am</td>
<td></td>
</tr>
<tr>
<td>Workshop session 1</td>
<td>9:30am – 10:30am</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Break</td>
<td>10:30am – 10:45am</td>
<td></td>
</tr>
<tr>
<td>Workshop session 2</td>
<td>10:45am – 12:15pm</td>
<td>90 minutes</td>
</tr>
<tr>
<td>Lunch and committee meetings</td>
<td>12:15pm – 1:45pm</td>
<td></td>
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<tr>
<td>Optional guided walk and picnic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workshop session 3</td>
<td>1:45pm – 2:45pm</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Break</td>
<td>2:45pm – 3:00 pm</td>
<td></td>
</tr>
<tr>
<td>Workshop session 4</td>
<td>3:00pm – 4:00pm</td>
<td>60 minutes</td>
</tr>
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</table>

### WEDNESDAY WORKSHOP SCHEDULE JUNE 1 / 2011

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Workshop Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshop session 5</td>
<td>9:15am – 10:15am</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Break</td>
<td>10:15am – 10:30am</td>
<td></td>
</tr>
<tr>
<td>Workshop session 6</td>
<td>10:30am – 12:00pm</td>
<td>90 minutes</td>
</tr>
<tr>
<td>Board meeting  Room F304</td>
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<tr>
<td>Lunch</td>
<td>12:00pm – 1:30pm</td>
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<tr>
<td>Optional guided walk and picnic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workshop session 7</td>
<td>1:30pm – 2:30pm</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Break</td>
<td>2:30pm – 2:45 pm</td>
<td></td>
</tr>
<tr>
<td>Workshop session 8</td>
<td>2:45pm – 3:45pm</td>
<td>60 minutes</td>
</tr>
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HAPS-I COURSES - ALL DAY TUESDAY

HAPS-I  Molecular and Cellular Basis of Disease
Room E344

HAPS-I  Advanced Cardiovascular Physiology
Room Y220

SESSION 1 – Tuesday 9:30am – 10:30am (60 minutes)

Workshop 101: Virtual anatomy: Maximizing student learning and assessment using online interactive tools
Room E112

Abstract: Practice Anatomy Lab can be used in the classroom as a supplement to available materials, outside the classroom as a way for students to prepare and study for lab or as a way to present a virtual lab in an online course. Come explore the many ways you can easily build an interactive learning environment and create online assessments for your students using PAL 3.0 and Mastering A&P.

Presenter: Ruth Heisler, Department of Integrative Physiology, University of Colorado – Boulder, CO
Co-Presenter: Nora Hebert, Red Rocks Community College

Workshop 102: Understanding the autonomic nervous system with patterns of design
Room F238 repeats as workshop 703

Abstract: The anatomy of the autonomic nervous system is often covered as a series of pathways and rules. Does this approach create a true understanding of the system? Does it answer questions such as: why is the sympathetic system thoracolumbar in origin, while the parasympathetic system is craniosacral in origin? What is the significance of the gray and white rami? Why is the sympathetic system more widespread than the parasympathetic system? A comparative and developmental approach establishes clear patterns of design that answer these questions and clarify the anatomy of the autonomic nervous system.

Presenter: Mark Nielsen, University of Utah

Workshop 103: Keep your students learning in and out of the lab with LabTutor 4 suite
Room F226

Abstract: LabTutor 4 suite is the latest edition of ADInstruments’ innovative educational software that enhances teaching and learning. Now with centralized administration of experiments for any number of courses and sections, managing student generated data has never been easier. New LabTutor Online gives students access to pre-lab materials and post lab data analysis via the internet. Come see how LabTutor 4 can save time and money and allow you and your students to get the most out of your laboratory technology!

Presenter: Wes Colgan, ADInstruments
Co-Presenter: Kevin Morgan, ADInstruments

Workshop 104: A brief history of anatomy
Room F100

Abstract: History helps us understand change and the way things are the way they are. For some, knowledge of history may be used to distinguish between the educated and the uneducated. A view of mine is that the History of Anatomy provides us with many examples of why we should avoid becoming overly confident, feeling superior and believing ourselves to be too self important and all-knowing in our understanding of the natural world. If this were not reason enough to study the History of Anatomy, there is the added benefit that it is just plain fun.

Presenter: John Cornell, Department of Biological Sciences, Saint Cloud State University

continued on next page
Workshop 105: The transformation of anatomy and physiology through medical simulation  
Room F338  
The field of medical simulation is growing at a geometric rate, and the number of students enrolled in anatomy and physiology classes that are preparing for medical and allied health careers parallels that growth. Medical simulators demonstrate physiological parameters, allowing the student to learn a “living physiology” and experience homeostatic mechanisms, bringing the “reality concept” that we experience in the media to the classroom.  
Presenter: Mark X. VanCura, University of North Carolina and Cape Fear Community College  
Co-Presenter: Nahel Awadallah, Johnston Community College  

Workshop 106: Paper strips and arrow diagrams: Two simple student activities to enhance linear thinking and learning of cause and effect events  
Room F206  
repeats as workshop 709  
Abstract: Paper strips and arrow diagrams can be used to teach students how to practice learning physiological processes that occur in sequential steps. The level of complexity can be varied to meet the needs of students. In this hands-on session, participants will work through examples of both types of activities and then discuss ways to enhance and/or combine them with other active learning exercises.  
Presenter: John Koch, John Tyler Community College  

Workshop 107: Relating anatomy, physiology and pathophysiology curriculum to the National Council Licensure Examination (NCLEX)  
Room F302  
Abstract: Upon graduation from nursing school, students must pass the National Council Licensure Examination (NCLEX) in order to legally practice as a nurse in the United States. The baccalaureate student nurse's anatomy, physiology and pathophysiology courses are the foundation of their future nursing practice and are assessed on NCLEX. This presentation will discuss the NCLEX assessment, question format and blueprint and also provide sample questions in anatomy, physiology, and pathophysiology for the participant's review. The information and resources provided may assist the instructor when teaching and creating assessments for the student nurse in these sciences.  
Presenter: Janet Levey, Herzing University  

Workshop 108: Directed dissection -- OR -- A cooperative workshop where we design an advanced anatomy lab course for our advanced students as dissectors and prosectors  
Room F306  
Abstract: What do we do with those bright students who wish to continue anatomical study beyond the prosected cadaver(s) used in our labs? This recent topic from the HAPS list-serve deserves some critical attention. Many respondents envisioned a course where the stakes, expectations and rewards for them and their students would be much higher than normal; such a course naturally would be a transformative experience for all involved. So let’s brainstorm and ‘workshop’ our ideas into such a course; we’ll outline outcomes, obstacles, needed resources and share our plans. Bring a draft syllabus and your ideas.  
Presenter: Jon Jackson, University of North Dakota  
Co-Presenter: Kerrie Hoar, Department of Biology, University of Wisconsin – LaCrosse  

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Workshop 109: Teaching anatomy to generation me via strategies that engage
Room F200  repeats as workshop 509

Abstract: Today’s ‘Generation Me’ students are technosavvy multitaskers with short attention spans who expect to have information tailored to them. The generational characteristics of millennial students can therefore pose unique challenges for anatomy instruction, which has traditionally emphasized rote memory from lectures that are riddled with tedium and archaic information. This workshop will describe the characteristics of millennial students and discuss how to tailor an anatomy course to work with, not against, their characteristics with the goal of further engaging them. Participants will learn classroom activities that include games, art activities, music and other media.

Presenter: Carrie Elzie, University of Alabama at Birmingham
Co-Presenter: Ryan Splittgerber, University of Alabama at Birmingham

Workshop 110: Unprepared and overwhelmed
Room F202

Abstract: Are your students unprepared for Anatomy and Physiology? Are you finding yourself teaching prerequisites your students should have had prior to taking your course? Lori Garrett, author of Get Ready for A&P, 2e shares Tips, Tricks and Best Practices that you can use to quickly get your students up to speed and give them a better opportunity for success in your class.

Presenter: Lori Garrett, Parkland College

Workshop 111: Clarifying expectations and generating meaningful feedback using rubrics
Room F212  repeats as workshop 712

Abstract: Have you ever had students report in their final course evaluations that they had no idea of your expectations of them? Do you find it difficult to clearly articulate to a student why they received a B− rather than the A they were working hard to achieve? In this workshop we will examine the usefulness of grading rubrics in helping us clarify our expectations (both to ourselves and our students) and in providing meaningful feedback that will help students to meet our expectations and achieve the grades they want.

Presenter: Margaret A. Weck, St. Louis College of Pharmacy

Workshop 112: As a science educator, what journals might be of interest to me?
Room F210

Abstract: Historically, faculty who focus on teaching have had few journals dedicated to this aspect of their profession. However, over the past several years the number of publications related to science pedagogy has slowly increased. This workshop will provide an overview of the databases and journals that are most relevant to faculty in teaching positions. Organizations that publish science education journals will be identified and the types of articles included, frequency of publication and methods of access of these journals will be explored. Participants will be encouraged to share their own experiences and resources for finding useful information related to their teaching.

Presenter: Ron Gerrits, EECS Department, Milwaukee School of Engineering

SESSION 2 – Tuesday 10:45am – 12:15pm (90 minutes)

Workshop 201: New Web-HUMAN features: Single click experiments and reserved web space for your class or college
Room E115  repeats as workshop 601

Abstract: Web-Human (iplacid.skidmore.edu) is a no-fee, quality web simulation that allows instructors and students to run simulated physiological and clinical experiments and store their results for future processing or evaluation. HUMAN is an integrated simulation in which the responses of 167 physiological parameters in six major systems can be observed. This workshop includes a brief introduction to HUMAN and then concentrates on introducing new features added to make its use more convenient, including click and run (pre-setup) models and the ability to create a section of folders and experiments useable only by members of your class or college.

Presenter: Roy S. Meyers, Skidmore College

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Workshop 202: Strategies for improving student performance in anatomy and physiology I and II
Room E112 repeats as workshop 602

Abstract: In this workshop we will present strategies we have used to improve student performance and retention in our classes. Specifically, we used the Mastering A&P online program’s tutorials, assignments and diagnostic data to pinpoint topics that students have struggled with in our courses. We have found that the key to improving student outcomes lies in the manner in which professors apply these tools and diagnostic data to their classes. We will also present data from preliminary studies that assess learning gains associated with implementation of the program. During a hands-on portion of the workshop participants will use Mastering A&P to create assignments, examine learning outcomes and explore the gradebook diagnostic tools.

Presenter: Rodney Holmes, Waubonsee Community College
Co-Presenter: Terry A. Austin, Temple College

Workshop 203: The first day of class: They'll want to come back for more!
Room F238 repeats as workshop 206

Abstract: The first impressions you make with your students set the tone for the entire course. Make the most of that first day. Come learn some simple techniques for the integration of group collaboration, terminology usage and microscopy and model experience into the first day learning plan. Stations include “That’s a banana?”, “Where’s McBurney?”, “What color is the nucleus?”, “Which way is up?”, and “Build a spleen.” Your students will leave that day with applicable knowledge, an idea of what to expect in the course, and the desire to come back for more.

Presenter: Thomas Lehman, Coconino Community College

Workshop 204: Using electromyography to demonstrate skeletal muscle physiology
Room F226

Abstract: This is a demonstration of an updated laboratory exercise used at MVCC that replaces the traditional frog gastrocnemius muscle laboratory activity. Using an ADInstruments data acquisition system the activity of the triceps, biceps and flexor digitorum superficialis muscles will selectively be recorded during six simple manoeuvres. Participants will make predictions about the activity of these muscles and then test their predictions using an actual electromyograph. This exercise demonstrates such concepts as the agonist-antagonist nature of skeletal muscle activity, the role played by gravity in muscle activity, the nature of concentric, eccentric and isometric contractions, motor unit summation and motor unit recruitment during muscle fatigue.

Presenter: Bill Perrotti, Mohawk Valley Community College
Co-Presenter: Aaron Fried, Mohawk Valley Community College
Co-Presenter: John Waters, Penn State University

Workshop 205: Let’s get together….and talk about online anatomy and physiology
Room F338

Abstract: Are all online anatomy and physiology courses the same? What common features should they have? With the growing push to offer online courses, is it time to take a look at a revised HAPS position on distance learning? Come join a round table discussion covering online learning issues and the beginnings of a new position statement.

Presenter: Betsy C. Brantley, Lansing Community College
Co-Presenter: Cynthia Herbrandson, Kellogg Community College
Workshop 206:  Histology challenge: Continuing medical education for instructors and bright students  
Room F210  repeats as workshop 606

Abstract: In the style of the online HAPS Histology Challenge, this workshop will present photomicrographs of normal tissues with a 'twist', i.e. some disease or unusual finding. We will discuss observations and conclusions and show how this presentation style can be used to teach either an honors section of Anatomy and Physiology or a follow-up pathophysiology course. Histology is often the means most accessible to HAPS members for presenting case studies of disease, thereby challenging both neophyte and expert. Means of acquiring case studies locally from hospitals and by sharing nationally in the online Histology Challenge will be discussed.

Presenter: William Karkow, University of Dubuque

Workshop 207:  Learning by touching: A hands-on approach to acquiring functional knowledge of human musculoskeletal systems  
Room F310  repeats as workshop 607

Abstract: The Functional Anatomy course offered by the School of Exercise Science, Physical and Health Education at the University of Victoria, BC, Canada offers an opportunity for students to develop knowledge of human musculoskeletal anatomy in a manner that addresses traditional learning styles and outcomes while fostering critical thinking, problem solving, interest and self-directed learning. This workshop will demonstrate how to stimulate learning by evoking our inherent interest in human movement. We will include examples of how to present structure and function and address methods to evaluate oral-practical-manual skills related to human musculoskeletal structure and function.

Presenter: Greg Mulligan, School of Exercise Science, University of Victoria  
Co-Presenter: Melissa Wilson, University of Victoria

Workshop 208:  Are high attrition rates plaguing your face-to-face, hybrid and online courses? Learn how to effectively use sound, innovative digital tools to increase student success and retention  
Room F336  repeats as workshop 608

Abstract: Professors already struggle with high attrition rates in face-to-face courses. With administrative demand for hybrid and online courses exploding, it is becoming increasingly difficult to maintain academic integrity. However, through the use of lecture capture and adaptive learning products that use artificial intelligence, professors can significantly enhance the delivery of these courses. As an added bonus, these tools permit qualitative measurement of student performance against learning outcomes. Professors can then conduct and analyze their results. Struggling students can be quickly identified, remediated and directed to tutoring centers for assistance.

Presenter: William L. Hoover, Bunker Hill Community College

Workshop 209:  A non-traditional approach to teaching anatomy and physiology  
Room F334

Abstract: 21st century learners demonstrate greater success when non-traditional teaching methods are employed. Concepts such as multiple intelligences, learning styles and project based learning can offer innovative approaches to both teaching and assessment. In this workshop participants will explore these concepts, identify personal learning styles and discuss creative pedagogical methodologies for teaching anatomy and physiology.

Presenter: Penny Humby, Crandall University  
Co-Presenter: Stacie Reck, Crandall University
Workshop 210: **Helping students make sense of physiological mechanisms**  
Room F206 (repeats as workshop 609)

Abstract: Many students approach their learning in physiology by memorizing descriptions of processes rather than trying to make sense of mechanisms. This approach does not prepare them to solve physiological problems. This workshop will focus on classroom techniques designed to help students apply general models (core principles) to physiological mechanisms and focus their attention on examining how mechanisms work rather than describing what the outcomes are. Attendees will participate in examining one or more of the following topics that students find challenging: the cardiac cycle, action potential propagation and the counter-current multiplier.

Presenter: Harold Modell, Physiology Educational Research Consortium

Workshop 211: **Teaching osmolarity, tonicity, and IV fluid therapy**  
Room F302

Abstract: Understanding osmolarity and tonicity is essential for health professionals faced with decisions about administering appropriate intravenous solutions. Student confusion is compounded by erroneous or misleading information that is widely disseminated on the internet, in introductory biology textbooks and even in nursing continuing education material. In this workshop we will review these two concepts and show how they can be taught to students using clinical scenarios. Some of the problems to be discussed require students to use quantitative skills and apply the principle of mass balance. Other problems, though seemingly simpler, require conceptual understanding to answer correctly.

Presenter: Dee Silverthorn, Integrative Biology, University of Texas at Austin

Workshop 212: **A hands-on, practical introduction to problem-based learning**  
Room F306

Abstract: Problem-based learning (PBL) is a teaching pedagogy that fosters thinking skills located at higher Bloom’s Taxonomy levels. PBL also helps students improve their writing and library research skills. Dr. Tallitsch has utilized PBL for more than 25 years in introductory and advanced courses at Augustana College. This workshop will provide an introduction to PBL and will offer alternative delivery methods that have been demonstrated to be effective at four-year colleges and community colleges. Electronic and paper handouts will include PBL problems, grading rubrics, delivery methodology and an introduction to the PBL literature.

Presenter: Robert B. Tallitsch, Augustana College

Workshop 213: **PowerPoint 101: basics for class delivery**  
Room F200

Abstract: This 90 minute workshop will assist beginners to use PowerPoint as a pedagogical tool for course delivery. Content includes how to set up the program for ease of use, selecting colors and fonts, graphics’ resolutions, adding a video or animation, using a slide changer, preparing handouts that are truly useful and taking advantage of learning management software to make the job easier. You will learn, with a few low-cost tools, how to build a PowerPoint presentation from scratch to class-ready in less than ten minutes.

Presenter: Robert Rawding, Department of Biology, Gannon University
Workshop 214: **Awesome analogies, dynamic demos and mnifty mnemonics: cardiovascular, respiratory and urinary systems**
Room F202

**Abstract:** Are you looking for ideas to reach students with different learning styles? Using analogies and demonstrations is an excellent approach to helping make abstract ideas more concrete. In addition, any approach that can jog those neurons into better knowledge retention is an added bonus. Join us to pick up some new teaching ideas and to share some ideas of your own.

**Presenter:** Carol Veil, Anne Arundel Community College
**Co-Presenter:** Javanika Mody, Anne Arundel Community College

Workshop 215: **Reignite anatomy instruction with inquiry based hands-on methods!**
Room F212

**Abstract:** Engage your students with a learning system proven to create greater student retention and higher test scores by having them build the human body systems and muscles in clay on a skeletal model. This method brings immediate assessment and ignites student investigative learning like you have never seen before! The power of the hand and mind connection is amazing!

**Presenter:** Teri Fleming, UT Medical School Houston, Texas

Workshop 216: **Learn how to use and integrate iWorx software and hardware in your laboratory**
Room F214

**Abstract:** Learn how easy it is to integrate LabScribe2 data recording software into your physiology labs. iWorx makes it simple to record and analyze physiological data. Organize labs into manuals suited for your courses, use instructions, illustrations and websites to assist students in performing an experiment – all with the click of a button. While recording, easily change display times, pause the data display to take measurements or work in an on-screen journal as data is displayed. Features make the selection of pertinent data effortless, allow simultaneous measurement from multiple channels and easily measure parameters such as ECGs, EMGs or lung volumes.

**Presenter:** Judi D’Aleo, iWorx Systems

Workshop 217: **Teaching human anatomy three-dimensionally through clay sculpting (Part 1)**
Room F216

**Abstract:** The Formative Haptics Institute (FHI), a research division of the Zoologik® Foundation, invites you to this dynamic anatomy sculpting workshop for the non-artist. Participants will be provided with plasticine clay and tools and be guided to form a 60% life-sized model of the human female pelvic girdle and lumbar vertebral segment. Muscles of this region will be sculpted and attached to the model, paying close attention to the correct origins and insertions. Current research on clay sculpting and other three-dimensional approaches to teaching and studying anatomy, as presented in the FHI research library, will also be discussed.

**Presenter:** Jon Zahourek, Zoologik® Foundation

Workshop 218: **Do more for your students in less time by letting your students do more for themselves**
Room LLC 136

**Abstract:** Enrolment in human Anatomy and Physiology courses is at an all-time high in all formats. As instructors, we aim to not only challenge and engage 21st century students, but also to comprehensively assess their performance and provide tutorial assistance for those students who require and desire it. Student-centered, active learning is the key to increasing student success without overtaxing the instructor. This hands-on workshop will explore ready-made solutions to this dilemma that will not only serve to engage students in more efficient, interactive learning activities, but save professors time by simultaneously working with their textbook and their learning management system.

**Presenter:** Steve Sullivan, Bucks County Community College

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SESSION 3 – Tuesday 1:45am – 2:45pm (60 minutes)

Workshop 301: Engage your students with interactive lessons that appear professionally designed using Softchalk™
Room E115 repeats as 501

Abstract: Are you looking for effective ways to direct student learning and engage students outside of class? Would you like to spend less time in lab explaining and more time doing? Do you want to develop course materials for online delivery? If the answer to any of these questions is yes, then consider authoring lessons that include videos, digital images, interactive activities and assessments using Softchalk™. Lessons are easily made available through your learning management systems, the internet or CD-ROM. Incorporation of pre-lab lessons in Anatomy and Physiology 1 has been associated with a significant improvement in lab practical exam scores. Feedback from both students and lab instructors was extremely positive.

Presenter: Mari Hopper, University of Southern Indiana

Workshop 302: Closing the loop: Assessing learning outcomes in the two-semester anatomy and physiology course sequence
Room E112 repeats as workshop 502

Abstract: Many schools have formulated learning outcomes for their courses, but meaningful quantitative assessment of outcomes can be an elusive target. Nevertheless, such analysis can reap a variety of rewards: data for program reviews, accreditation, or course redesigns, help to departments maintaining a consistent learning experience across multiple sections and feedback to instructors on their teaching. In this workshop, Drs. Hanna and Norman will discuss and demonstrate how they articulated learning outcomes for their institutions’ two-semester Anatomy and Physiology courses, set up online homework/activities using Pearson's Mastering A&P system, linked their outcomes with these activities and collected data. They will also discuss potential uses for their data.

Presenter: William Hanna, Massasoit Community College
Co-Presenter: Lourdes Norman-McKay, Florida State College at Jacksonville, Kent Campus-Cecil Center

Workshop 303: Using physiology laboratory simulations for hybrid and online labs
Room LLC136

Abstract: This workshop will provide an opportunity for attendees to explore all the new and exciting elements of PhysioEx 9.0, which is the newest version of a suite of physiology laboratory simulations. This version of PhysioEx contains major revisions to the user interface and the pedagogy that many instructors will find desirable and useful in their Anatomy and Physiology courses. Highlights of the workshop will include presentation of the on-line teaching features (e.g. submission of an electronic laboratory report), lots of hands-on exploration of the laboratories and an opportunity to discuss concerns and questions that instructors have about virtual laboratories.

Presenter: Andrew Lokuta, University of Wisconsin School of Medicine and Public Health
Co-Presenter: Lori A. Smith, American River College

Workshop 304: Thinking outside the box: An introduction to the visual format
Room F100 repeats as workshop 705

Abstract: Good students can excel with the traditional textbook approach to information delivery, but others either struggle to earn a C or D or else fail or drop the course. There is a disconnect between today’s struggling students and the method of information delivery in traditional textbooks. Addressing that disconnect has meant abandoning a format used for >1500 years, as well as most of the traditional publishing methodologies. This workshop will discuss the origins and evolution of traditional and alternative formats, the results of ~100 class tests, the impacts on lecture planning and classroom experiences working from a Visual text.

Presenter: Frederic (Ric) Martini, University of Hawaii at Manoa
Co-Presenter: Judi Nath, Lourdes College

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Workshop 305: Advanced iWorx training using the GA-300 Gas Analyzer for VO₂/VCO₂/VO₂max
Room F214

Abstract: This workshop will show you how easy it is to record and analyze VO₂/VCO₂/VO₂max parameters for exercise physiology. Using the IWX/214, LabScribe2 software and the GA-300 gas analyzer, recording and understanding RER, RMR and other metabolic parameters is a simple, straightforward process. This system uses a standard spirometer flow head and mixing chamber to record the subject’s exhaled CO₂ and O₂ percentages. The software takes over and does the rest. Learn how to use on-line and off-line metabolic calculations to generate reports and compare subjects. This is an advanced workshop for those already familiar with using the iWorx systems.

Presenter: Judi D’Aleo, iWorx Systems

Workshop 306: Creating lessons with the Biopac student lab system
Room F310  repeats as workshop 506

Abstract: Learn how to use the power and flexibility of the Biopac Student Lab to customize existing lessons, create your own lessons or design independent projects. Open to current BSL users and all instructors who want to see the full extent of the Biopac Student Lab’s capabilities. No programming required, just simple pull-down menu selections and easy to set presets and preferences. The BSL PRO software allows you to perform exciting lessons on human and animal subjects. A wide range of BSL PRO lessons is downloadable from our web site — BSL PRO Lessons provide the lesson template file and lesson instructions.

Presenter: Taj Hudson, BIOPAC Systems, Inc.
Co-Presenter: William McMullen, BIOPAC Systems, Inc.

Workshop 307: Quantitative exercises for the anatomy and physiology class
Room F334  repeats as workshop 805

Abstract: Many physiology students are afraid of math, yet must become comfortable with it if they intend to pursue medical or research careers. Infusing mathematical principles in physiology courses is important to give students opportunities to practice basic arithmetic skills such using conversion factors and to understand written problems and interpret graphs. This workshop presents examples of exercises that apply basic arithmetic skills to physiology, allowing instructors to reinforce quantitative skills with minimal distraction from the underlying physiological concepts. Problem- and answer-generating web pages can create easy in-class activities, generate homework assignments and give your students ample opportunities to practice.

Presenter: Patricia Bowne, Alverno College

Workshop 308: IRS: Internships, relationships, scholarship
Room F336

Abstract: Competition for entrance into professional medical programs (medical school, PA, PT, OT, dentistry) has statistically increased as more students seek these degrees. At Louisiana State University, an internship program allows students to shadow a professional in the field of study for which they intend to apply. This program has proven to give students both the needed experience and the required hours of clinical practice often mandated as a prerequisite for applying. The workshop will discuss issues such as how to start such a program, maintaining the integrity of the program and how to supervise such a program.

Presenter: Wanda Hargroder, Louisiana State University

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Workshop 309: Online M.S. in human anatomy and physiology instruction  
Room F206

Abstract: Explore a unique innovation in anatomy and physiology education offered online: M.S. in Human Anatomy and Physiology Instruction (MSHAPI). The New York Chiropractic College, a fully accredited multi-disciplinary health care education institution, designed this program for a very select audience – terminal health care degree holders and academic biologists teaching, or preparing to teach, anatomy and physiology in the undergraduate setting. It provides academic biologists with significant professional development, achievement for consideration in advancement in rank and grant of tenure and a complementary M.S. degree. Together, these assist faculty members in providing a quality learning experience for students pursuing studies in the professional health sciences.

Presenter: Robert Crocker, New York Chiropractic College

Workshop 310: The counter-current multi what?  
Room F302  repeats as workshop 507

Abstract: Have you struggled to explain the counter-current multiplier and other renal functions to your undergraduate students? Come explore various ways to effectively teach renal anatomy and physiology. We will break down the incredibly complex nephron into easily explainable components.

Presenter: Anne Clayton, Lansing Community College

Workshop 311: Techniques to help your students ‘get’ histology  
Room F306  repeats as workshop 808

Abstract: One of the most difficult skills for anatomy and physiology students to learn is to identify tissues viewed microscopically. In this workshop we will present different techniques to help students develop this skill. This workshop is especially intended for people teaching pre-health science anatomy or anatomy and physiology. Participants are encouraged to share their own successful techniques.

Presenter: Robert Leopard, Monroe Community College

Workshop 312: Social Media in Education and Organizations  
Room F202

Abstract: Social media has become a powerful tool in education and organizations. The power of this type of media has been clearly shown in politics and has recently brought down governments. This workshop will introduce participants to the variety of social media available such as Facebook, Twitter, and Linkedin with examples of its uses in education and organizations. Some legal issues related to social media will also be discussed. If you think you are behind your students in your engagement with social media this workshop may give you at least a serviceable baseline knowledge. If you have questioned the need to use social media this workshop may answer some of your questions too.

Presenter: Shanan Molnar, Business Manager, Human Anatomy & Physiology Society  
Co-presenter: Laurence Spraggs, Executive Director, Human Anatomy & Physiology Society

Workshop 313: What's in it for them and us? – Teaching and assessing using classroom response technology (Clickers)  
Room F212  repeated as workshop 711

Abstract: Today's students want to be contributors and active participants in the planning of their own learning. How can we help them learn what and how to study? Timely in-class feedback to student responses on lecture questions, among other pedagogical techniques, proves to be an effective motivator for learning. In this presentation I will share some ways of creating an interactive learning environment while measuring students’ understanding of the lecture material through the use of clickers. Different clicker tricks will be demonstrated. If you are a user of this tool, please come with your own ideas and observations. Clickers will be provided.

Presenter: Santa Makstenieks, Concordia University Wisconsin

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Workshop 314: Teaching human anatomy two-dimensionally through drawing
Room F216

Abstract: The Formative Haptics Institute (FHI), a research division of the Zoologik® Foundation, invites you to this dynamic anatomy drawing workshop for the non-artist. Participants will be provided with drawing pads and pencils and will learn to draw muscles and internal organs in place, both with and without a skeletal template. These basic drawing techniques will be useful in teaching anatomy classes. Current research on drawing and other two-dimensional approaches to teaching and studying anatomy, as presented in the FHI research library, will also be discussed.

Presenter: Jon Zahourek, Zoologik® Foundation

SESSION 4 – Tuesday 3:00am – 4:00pm (60 minutes)

Workshop 401: Accreditation... that was easy!
Room E115 repeats as workshop 801

Description: Assessment and Accreditation: The dreaded “A” words. If you are wondering: How do we begin this process? How do I get all of my colleagues on board? How do I manage and analyze the data? We will show you how to easily create assessments by choosing pre-populated questions linked to learning outcomes, how to distribute the assignment to every student in every section (no matter how many sections and/or instructors), and how to collect performance results and run reports for the accreditation portfolio. Let us show you how painless it can be.

Presenter: Tracy Young, Middlesex County College
Co-Presenter: Nahel Awadallah, Johnston Community College

Workshop 402: How to develop online exercises to help students improve their skills in answering short answer questions (SAQs)
Room F226 repeated as workshop 704

Abstract: When writing summative examinations, some students find it difficult to construct well-organized and concise answers to short answer questions (SAQs). In addition to incorrect physiological information, common errors include poor answer organization as well as the inclusion of accurate but irrelevant information. This workshop will demonstrate the use of Quandary to create interactive exercises that give students practice in developing answers to physiology-based SAQs, using instantaneous instructional feedback, answer choice by answer choice, to help students recognize these errors and improve their SAQ-answering skills. The workshop will finish by engaging participants in the construction of an interactive SAQ exercise.

Presenter: Jackie Carnegie, University of Ottawa

Workshop 403: Biological evolution within the anatomy and physiology classroom: A calm, rational and educational roundtable discussion
Room F338

Abstract: Despite the place of evolution as a foundational concept in biology, most anatomy and physiology courses do not incorporate evolutionary concepts into their curricula. When questions about evolution arise in our courses students and instructors are often uncomfortable. How should we respond when students promote ideas relating to creationism or other theistic views of life? This roundtable discussion will allow instructors to talk openly about their experiences with the topic of evolution in the classroom. Special efforts will be made to keep discussions calm, rational and educational.

Presenter: Murray Jensen, University of Minnesota
Co-Presenter: Ken Saladin, Georgia College and State University
Co-Presenter: Jon Jackson, Department of Anatomy and Cell Biology, University of North Dakota
Co-Presenter: Carl Shuster, Madison Area Technical College

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Workshop 404:  Introducing the new BIOPAC MP45: A budget beating physiology lab solution for community colleges
Room F310  repeated as workshop 707

Abstract: The new handheld MP45 is the latest addition to the Biopac Student Lab family. The powerful, two-channel system works with BIOPAC’s extensive curriculum library and broad range of transducers. The MP45 uses USB connectivity to receive power and transmit data. Like all BSL products, the system is intuitive and extremely robust. There are no knobs, dials or switches to confuse students, just a USB cord and two ports to connect transducers and electrodes. Connect the USB, launch a BSL Lesson and start recording data. Attend the workshop and be amazed by the power, flexibility and budget-beating price.

Presenter: Taj Hudson, BIOPAC Systems, Inc.
Co-Presenter: William McMullen, BIOPAC Systems, Inc.

Workshop 405:  Pitfalls and Highlights of Creating Your Own Lab Manual
Room F334  repeated as workshop 804

Abstract: Your workshop presenter has published four editions of his co-written lab manual. He will discuss the pitfalls of writing your own lab manual and the great highlights in teaching from a manual that is customized to your lab class. The satisfaction outweighs the frustrations. But it’s best if you know what you’re getting into. Once you’ve attended this presentation, you’ll have the perspective and tools that you need to be a great author!

Presenter: Leo B. Stouder, Broward College

Workshop 406:  Increasing student retention in distance learning anatomy and physiology courses
Room F336

Abstract: Student retention rates in anatomy and physiology courses taught via distance learning may be significantly lower than the rates in traditional format courses. What can be done to improve student retention in an online anatomy and physiology course? Does distributing the HAPS-SLOs directly to students help? Do learning style inventories help? How can interactions between students and between students and faculty be improved? Please be ready to share your ideas and experiences, too.

Presenter: Janice Yoder Smith, Tarrant County College Northwest Campus

Workshop 407:  Engaging and assessing online students with innovative technologies and andragogies
Room F206  repeats as workshop 806

Abstract: Online anatomy and physiology instruction must evolve to maximize the potential effectiveness of technological innovations offered by publishers and software companies. This presentation examines one method of assessing potential course materials and how selected resources can be integrated to maximize student engagement for core learning as well as to facilitate student assessment.

Presenter: John Arle, Lane Community College

Workshop 408:  Using student-generated models in anatomy and physiology classes
Room F306

Abstract: These two professors assigned Anatomy and Physiology students the project of making 3-D models of selected structures in the human body. Students worked as solo members, in teams of two or in collaboration with art department majors. Models were presented in class together with a discussion of the media used, cost, challenges and references used. Most items were then displayed in an art show in the library. The project was well-liked by students and the models are used by professors throughout the Biology area.

Presenter: Joyce Kronberg, West Virginia University at Parkersburg
Co-Presenter: Marshall Griffin, West Virginia University at Parkersburg

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**Workshop 409:**  
**Course policy:** Cell phone use encouraged in class  
Room F200  
repeats as workshop 809

**Abstract:** Personal Response Systems or ‘clickers’ have become a valuable form of instructor-student interaction, in particular for large classroom settings. In this workshop we will describe a new clicker-like technology, Top Hat Monocle, whereby students use their own cell phones, smart phones or laptops to answer questions posed by the instructor in real time. The advantages of Top Hat are that students can engage by answering several forms of questions in addition to interacting with graphical demonstrations, which increases student engagement. Participants will have the opportunity to interact with Top Hat and experience the unique features of the technology.

**Presenter:** Daniel Belliveau, Department of Anatomy and Cell Biology, University of Western Ontario  
**Co-Presenter:** Mohsen Shahini, Top Hat Monocle

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**Workshop 410:**  
**Leadership from the Middle**  
Room F202

Leadership skills can be extremely important to faculty in educational institutions today. Participants will learn to analyze leadership challenges and opportunities, and discuss leadership styles that may be effective in leading change from the middle in their institutions. Participants will be given an outline for developing a personal leadership philosophy. Leadership development is an important form of personal development. HAPS leadership opportunities will also be enumerated as a way to apply and practice leadership skills. A leadership blog will allow participants to continue leadership development after the conference concludes.

**Presenter:** Dr. Laurence Spraggs, Executive Director, Human Anatomy & Physiology Society

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**Workshop 411:**  
**Visual presentation of scientific information**  
Room F212

**Abstract:** Anatomy and Physiology is one of the most visual subjects taught in college. To teach anatomy and physiology successfully requires using an effective combination of design, art, and layout, not only to keep students interested but also to organize material in a way that helps them learn. Whether you are giving a PowerPoint presentation, creating a poster or writing for a journal or textbook there are specific design and illustration concepts to make your work effective – and exciting.

**Presenter:** William C. Ober, Washington & Lee University  
**Co-Presenter:** Claire W. Garrison, Medical & Scientific Illustration

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**Workshop 412:**  
**Using biology concept inventories in anatomy and physiology**  
Room F214  
repeats as workshop 512

**Abstract:** Many college students approach the subject of anatomy and physiology as a collection of ‘facts’ to be memorized and often fail to understand the core concepts or big-picture ideas. In this workshop I will describe what is meant by the term concept inventory. Further, I will review several published or (in progress) concept inventories for biology topics such as genetics, natural selection, osmosis and cell division and discuss how they may be used. In addition, I will provide referenced resources for these tools. I and other physiologists propose to identify what core physiology concepts students should learn and to develop a physiology concept inventory (conceptual assessment) to assess the extent to which students can understand and apply these concepts.

**Presenter:** Jenny McFarland, Edmonds Community College

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HAPS-I COURSES - ALL DAY WEDNESDAY

HAPS-I  Advances in Anatomy and Physiology
Room E344

HAPS-I  Concepts in Embryology
Room Y220

SESSION 5 – Wednesday 9:15am – 10:15am (60 minutes)

Workshop 501: Engage your students with interactive lessons that appear professionally designed using Softchalk™
Room E115 repeat of workshop 301

Abstract: Are you looking for effective ways to direct student learning and engage students outside of class? Would you like to spend less time in lab explaining and more time doing? Do you want to develop course materials for online delivery? If the answer to any of these questions is yes, then consider authoring lessons that include videos, digital images, interactive activities and assessments using Softchalk™. Lessons are easily made available through your learning management systems, the internet or CD-ROM. Incorporation of pre-lab lessons in Anatomy and Physiology 1 has been associated with a significant improvement in lab practical exam scores. Feedback from both students and lab instructors was extremely positive.

Presenter: Mari Hopper, University of Southern Indiana

Workshop 502: Closing the loop: Assessing learning outcomes in the two-semester anatomy and physiology course sequence
Room E112 repeat of workshop 302

Abstract: Many schools have formulated learning outcomes for their courses, but meaningful quantitative assessment of outcomes can be an elusive target. Nevertheless, such analysis can reap a variety of rewards: data for program reviews, accreditation, or course redesigns, help to departments maintaining a consistent learning experience across multiple sections and feedback to instructors on their teaching. In this workshop, Drs. Hanna and Norman will discuss and demonstrate how they articulated learning outcomes for their institutions’ two-semester Anatomy and Physiology courses, set up online homework/activities using Pearson’s Mastering A&P system, linked their outcomes with these activities and collected data. They will also discuss potential uses for their data.

Presenter: William Hanna, Massasoit Community College
Co-Presenter: Lourdes Norman-McKay, Florida State College at Jacksonville, Kent Campus-Cecil Center

Workshop 503: Create or customize any LabTutor experiment with LabAuthor 4
Room F226

Abstract: LabAuthor 4 lets you create and edit LabTutor experiments. LabAuthor incorporates a very intuitive, drag-and-drop user interface for editing the HTML elements of a LabTutor experiment. Virtually any media (.mpg, .wmv, .mp3, .avi, etc.) can be incorporated into your labs with LabTutor. Setup of the data acquisition and PowerLab control elements is quick and easy. Combined with LabTutor 4, with its centralized experiment administration, and LabTutor Online, giving access to pre-lab materials and post-lab data analysis via the internet; the options to enhance your students’ lab experience are limitless!

Presenter: Wes Colgan, ADInstruments
Co-Presenter: Kevin Morgan, ADInstruments

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Workshop 504: Orthostatic intolerance – gravity, body position, hypotension and baroreflexes
Room F100

Abstract: This workshop will provide an overview of the anatomical and physiological mechanisms humans employ to counter the effects of gravity. It will then discuss the acute effects of orthostatic stress and other models of hypotension on the respiratory and cardiovascular systems. Finally, the special case of sustained exposure to microgravity and its effects on cardiorespiratory dynamics will be examined.

Presenter: Trevor A. Day, Mount Royal University

Workshop 505: Get your students involved with concept mapping in the classroom
Room F338

Abstract: Join us in this workshop and explore concept mapping as a strategy for engaging students in their own learning. This interactive workshop will introduce you to effective techniques for getting your students involved, including whole-class kinesthetic concept mapping, group concept mapping with pre-made cards, individual concept mapping with flash cards and an overview of electronic concept mapping. Electronic concept mapping techniques will be covered in more detail in a separate workshop.

Presenter: Ellen Lathrop-Davis, Community College of Baltimore County
Co-Presenter: Ewa Gorski, Community College of Baltimore County

Workshop 506: Creating lessons with the Biopac student lab system
Room F310 repeat of workshop 306

Abstract: Learn how to use the power and flexibility of the Biopac Student Lab to customize existing lessons, create your own lessons or design independent projects. Open to current BSL users and all instructors who want to see the full extent of the Biopac Student Lab’s capabilities. No programming required, just simple pull-down menu selections and easy to set presets and preferences. The BSL PRO software allows you to perform exciting lessons on human and animal subjects. A wide range of BSL PRO lessons is downloadable from our web site — BSL PRO Lessons provide the lesson template file and lesson instructions.

Presenter: Taj Hudson, BIOPAC Systems, Inc.
Co-Presenter: William McMullen, BIOPAC Systems, Inc.

Workshop 507: The counter-current multi what?
Room F302 repeat of workshop 310

Abstract: Have you struggled to explain the counter-current multiplier and other renal functions to your undergraduate students? Come explore various ways to effectively teach renal anatomy and physiology. We will break down the incredibly complex nephron into easily explainable components.

Presenter: Anne Clayton, Lansing Community College

Workshop 508: How the nose got its thrill: On the curious origins of some unusual anatomic terms
Room F306

Abstract: Do you find yourself in stunned silence when a lab student, holding a full-color, 3-D model of the human eye, misses the painted yellow dot on the temporal side of the optic disc and asks, “Where’s the macula lutea?” It can be a jungle out there if you don’t know that anatomic terms actually have real meaning in some dead language. We can give students meaningful assistance by teaching them vocabulary along with the organization and function of the body’s systems, organs and tissues. This workshop will focus on structures with particularly confusing – and thus, interesting – names.

Presenter: Jon Jackson, University of North Dakota

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Workshop 509: Teaching anatomy to generation me via strategies that engage
Room F200 repeat of workshop 109

Abstract: Today’s ‘Generation Me’ students are technosavvy multitaskers with short attention spans who expect to have information tailored to them. The generational characteristics of millennial students can therefore pose unique challenges for anatomy instruction, which has traditionally emphasized rote memory from lectures that are riddled with tedium and archaic information. This workshop will describe the characteristics of millennial students and discuss how to tailor an anatomy course to work with, not against, their characteristics with the goal of further engaging them. Participants will learn classroom activities that include games, art activities, music and other media.

Presenter: Carrie Elzie, University of Alabama at Birmingham
Co-Presenter: Ryan Splittgerber, University of Alabama at Birmingham

Workshop 510: An introduction to Process Oriented Guided Inquiry Learning (POGIL)
Room F202

Abstract: Process Oriented Guided Inquiry Learning (POGIL) is an approach that has been used successfully for several years in teaching the physical sciences. The POGIL process provides instructors with a simple strategy to incorporate inquiry and cooperative group learning into their classrooms and labs. Participants in this workshop will participate in a POGIL curriculum module and also learn how to lead a POGIL activity.

Presenter: Murray Jensen, University of Minnesota

Workshop 511: Making class lectures meaningful: Incorporating scientific research into anatomy and physiology classes
Room F212

Abstract: Sometimes it is a challenging task for instructors to make lengthy class lectures interesting, especially for non-traditional students. This presentation will focus on making class lectures stimulating and motivating by incorporating key research studies into related lecture topics. The presenter will provide materials and references from well known research studies as examples of this approach. Some of the examples are Rogaine and baldness, low dose aspirin to prevent heart attack, a blood pressure study with baby foods and more. Experience suggests that this approach stimulates students’ interest in the topics and that students enjoy class more.

Presenter: Mukul C. Ganguli, Biology Department, South Texas College

Workshop 512: Using biology concept inventories in anatomy and physiology
Room F214 repeat of workshop 412

Abstract: Many college students approach the subject of anatomy and physiology as a collection of ‘facts’ to be memorized and often fail to understand the core concepts or big-picture ideas. In this workshop I will describe what is meant by the term concept inventory. Further, I will review several published or (in progress) concept inventories for biology topics such as genetics, natural selection, osmosis and cell division and discuss how they may be used. In addition, I will provide referenced resources for these tools. I and other physiologists propose to identify what core physiology concepts students should learn and to develop a physiology concept inventory (conceptual assessment) to assess the extent to which students can understand and apply these concepts.

Presenter: Jenny McFarland, Edmonds Community College
SESSION 6 – Wednesday 10:30am – 12:00pm (90 minutes)

Workshop 601: New Web-HUMAN features: Single click experiments and reserved web space for your class or college
Room E115 repeat of workshop 201

Abstract: Web-Human (/placid.skidmore.edu) is a no-fee, quality web simulation that allows instructors and students to run simulated physiological and clinical experiments and store their results for future processing or evaluation. HUMAN is an integrated simulation in which the responses of 167 physiological parameters in six major systems can be observed. This workshop includes a brief introduction to HUMAN and then concentrates on introducing new features added to make its use more convenient, including click and run (pre-setup) models and the ability to create a section of folders and experiments useable only by members of your class or college.

Presenter: Roy S. Meyers, Skidmore College

Workshop 602: Strategies for improving student performance in anatomy and physiology I and II
Room E112 repeat of workshop 202

Abstract: In this workshop we will present strategies we have used to improve student performance and retention in our classes. Specifically, we used the Mastering A&P online program’s tutorials, assignments and diagnostic data to pinpoint topics that students have struggled with in our courses. We have found that the key to improving student outcomes lies in the manner in which professors apply these tools and diagnostic data to their classes. We will also present data from preliminary studies that assess learning gains associated with implementation of the program. During a hands-on portion of the workshop participants will use Mastering A&P to create assignments, examine learning outcomes and explore the gradebook diagnostic tools.

Presenter: Rodney Holmes, Waubonsee Community College
Co-Presenter: Terry A. Austin, Temple College

Workshop 603: Do more for your students in less time by letting your students do more for themselves
Room LLC 136 repeat of workshop 218

Abstract: Enrolment in human Anatomy and Physiology courses is at an all-time high in all formats. As instructors, we aim to not only challenge and engage 21st century students, but also to comprehensively assess their performance and provide tutorial assistance for those students who require and desire it. Student-centered, active learning is the key to increasing student success without overtaxing the instructor. This hands-on workshop will explore ready-made solutions to this dilemma that will not only serve to engage students in more efficient, interactive learning activities, but save professors time by simultaneously working with their textbook and their learning management system.

Presenter: Steve Sullivan, Bucks County Community College

Workshop 604: The first day of class: They'll want to come back for more!
Room F238 repeat of workshop 203

Abstract: The first impressions you make with your students set the tone for the entire course. Make the most of that first day. Come learn some simple techniques for the integration of group collaboration, terminology usage and microscopy and model experience into the first day learning plan. Stations include “That’s a banana?”, “Where’s McBurney?”, “What color is the nucleus?”, “Which way is up?”, and “Build a spleen.” Your students will leave that day with applicable knowledge, an idea of what to expect in the course, and the desire to come back for more.

Presenter: Thomas Lehman, Coconino Community College
Workshop 605: Haptics in the anatomy and physiology classroom: building models of physiological processes to build cognitive skills
Room F226

Abstract: Haptics is a term that refers to touch. In the classroom, the use of hands-on activities such as model-building helps students understand abstract concepts such as muscle contraction, gene expression, protein synthesis and hormone-target cell interaction. This workshop will demonstrate several learning activities that create models of physiological processes using craft supplies and simple toys. Using objects to represent anatomical structures and assembling the structures in models help students appreciate the step-wise nature of processes, comprehend the relationships between anatomical structures and grasp the role of anatomical structures in the physiological process.

Presenter: Lauretta O’Dell, Hillsborough Community College/Brandon Campus

Workshop 606: Histology challenge: Continuing medical education for instructors and bright students
Room F210 repeat of workshop 206

Abstract: In the style of the online HAPS Histology Challenge, this workshop will present photomicrographs of normal tissues with a ‘twist’, i.e. some disease or unusual finding. We will discuss observations and conclusions and show how this presentation style can be used to teach either an honors section of Anatomy and Physiology or a follow-up pathophysiology course. Histology is often the means most accessible to HAPS members for presenting case studies of disease, thereby challenging both neophyte and expert. Means of acquiring case studies locally from hospitals and by sharing nationally in the online Histology Challenge will be discussed.

Presenter: William Karkow, University of Dubuque

Workshop 607: Learning by touching: A hands-on approach to acquiring functional knowledge of human musculoskeletal systems
Room F310 repeats as workshop 207

Abstract: The Functional Anatomy course offered by the School of Exercise Science, Physical and Health Education at the University of Victoria, BC, Canada offers an opportunity for students to develop knowledge of human musculoskeletal anatomy in a manner that addresses traditional learning styles and outcomes while fostering critical thinking, problem solving, interest and self-directed learning. This workshop will demonstrate how to stimulate learning by evoking our inherent interest in human movement. We will include examples of how to present structure and function and address methods to evaluate oral-practical-manual skills related to human musculoskeletal structure and function.

Presenter: Greg Mulligan, School of Exercise Science, University of Victoria
Co-Presenter: Melissa Wilson, University of Victoria

Workshop 608: Are high attrition rates plaguing your face-to-face, hybrid and online courses? Learn how to effectively use sound, innovative digital tools to increase student success and retention
Room F336 repeat of workshop 208

Abstract: Professors already struggle with high attrition rates in face-to-face courses. With administrative demand for hybrid and online courses exploding, it is becoming increasingly difficult to maintain academic integrity. However, through the use of lecture capture and adaptive learning products that use artificial intelligence, professors can significantly enhance the delivery of these courses. As an added bonus, these tools permit qualitative measurement of student performance against learning outcomes. Professors can then conduct and analyze their results. Struggling students can be quickly identified, remediated and directed to tutoring centers for assistance.

Presenter: William L. Hoover, Bunker Hill Community College

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Workshop 609 : Helping students make sense of physiological mechanisms
Room F206 repeat of workshop 210

Abstract: Many students approach their learning in physiology by memorizing descriptions of processes rather than trying to make sense of mechanisms. This approach does not prepare them to solve physiological problems. This workshop will focus on classroom techniques designed to help students apply general models (core principles) to physiological mechanisms and focus their attention on examining how mechanisms work rather than describing what the outcomes are. Attendees will participate in examining one or more of the following topics that students find challenging: the cardiac cycle, action potential propagation and the counter-current multiplier.

Presenter: Harold Modell, Physiology Educational Research Consortium

Workshop 610: Problem-based learning at high altitude, the Nepal experience: training, tutoring and trekking
Room F302

Abstract: The presenters will introduce the basic philosophy, process and practice of Problem-Based Learning as used in the UBC/UVic medical program. They will then tell of their experience in Nepal working with faculty of a relatively new medical school to prepare them for tutoring students in this learning technique. If time allows, the presenters will offer the opportunity for participants to experience part of a typical PBL tutorial.

Presenter: Jane Gair, Island Medical Program, University of Victoria
Co-Presenter: Joan Mitchell, Island Medical Program, University of Victoria

Workshop 611: Who done it? Integrating inexpensive digital microscopy into anatomy and physiology inquiry-based instruction
Room F306

Abstract: Forensic Microscopy is the utilization of microscopy techniques for legal purposes. It is an exciting application of microscopy principles for examination of a variety of samples, ranging from household dust and soil to human pathology specimens. Inquiry-based instruction can be achieved using instructional activities that apply forensic microscopy principles. These instructional activities may be simple or complex. This interactive presentation will demonstrate field-tested classroom case studies, lecture demonstrations and laboratory activities that reinforce student content knowledge of histology, pathology and general anatomical and physiological principles. Demonstrated in this presentation are the Swift M3-F forensic microscope and Motic Trace software as inquiry-based learning tools.

Presenter: Brian R. Shmaefsky, Lone Star College – Kingwood
Co-Presenter: Cyndi-Syverson Mercer, Swift Optical Instruments, Inc.

Workshop 612: Advanced PowerPoint: getting more out of your lectures
Room F200

Abstract: This 90 minute workshop will assist more experienced PowerPoint users to use PowerPoint in a more well-crafted fashion for course delivery. Content includes how to utilize publishers’ images on DVDs or CDs to build your own content, how not to construct a PowerPoint presentation – with examples developed by so-called ‘experts’, the anti-Tufte model, creating professional posters from one PowerPoint slide, linking two or more presentations and other sophisticated techniques to master the art of PowerPoint.

Presenter: Robert Rawding, Department of Biology, Gannon University
Workshop 613: **Teaching human anatomy three-dimensionally through clay sculpting (Part 2)**  
Room F216  

**Abstract:** The Formative Haptics Institute (FHI), a research division of the Zoologik® Foundation, invites you to this dynamic anatomy sculpting workshop for the non-artist. Participants will be provided with plasticine clay and sculpting tools and will be guided to form a 60% life-size model of the uterus, ovaries and fallopian tubes. Sculpted organs will then be placed into the pelvic girdle. Current research on clay sculpting and other three-dimensional approaches to teaching and studying anatomy, as presented in the FHI research library, will also be discussed.  

**Presenter:** Jon Zahourek, Zoologik® Foundation

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Workshop 614: **Reignite anatomy instruction with inquiry based hands-on methods!**  
Room F212  
repeat of workshop 215

**Abstract:** Engage your students with a learning system proven to create greater student retention and higher test scores by having them build the human body systems and muscles in clay on a skeletal model. This method brings immediate assessment and ignites student investigative learning like you have never seen before! The power of the hand and mind connection is amazing!  

**Presenter:** Teri Fleming, UT Medical School Houston, Texas

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**SESSION 7 – Wednesday 1:30am – 2:30pm (60 minutes)**

Workshop 701: **Concept mapping for online students**  
Room E115

**Abstract:** Concept mapping is a valuable strategy to help students interact with course material, follow pathways, organize processes and examine relationships between pieces of information. Instructor feedback is important in guiding students in the right direction while they work through this process. But how can concept mapping be accomplished in an online environment? The answer is through the use of software. In this workshop, you will learn to use Microsoft Word and IHMC Cmap Tools (freeware) to make your own concept maps. You will also learn how to help your students make their own concept maps that can be submitted for your feedback.  

**Presenter:** Ellen Lathrop-Davis, Community College of Baltimore County

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Workshop 702: **Bring virtual cadavers to your A&P course**  
Room E112

**Description:** Most of us are limited in our teaching of “human” anatomy to the use of plastic models or animals (requiring students to make connections). Get free instructor access to the best-selling virtual cadaver dissection product (now customizable), and go hands-on. Then, learn how to record your lectures with the click of a button using only a computer. Come see how easy it is to use and hear testimony on decreased attrition rates for your colleagues.  

**Presenter:** Greg Reeder, Broward College  
**Co-Presenter:** Michael Kopenits, Amarillo Community College

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Workshop 703: **Understanding the autonomic nervous system with patterns of design**  
Room F238  
repeat of workshop 102

**Abstract:** The anatomy of the autonomic nervous system is often covered as a series of pathways and rules. Does this approach create a true understanding of the system? Does it answer questions such as: why is the sympathetic system thoracolumbar in origin, while the parasympathetic system is craniosacral in origin? What is the significance of the gray and white rami? Why is the sympathetic system more widespread than the parasympathetic system? A comparative and developmental approach establishes clear patterns of design that answer these questions and clarify the anatomy of the autonomic nervous system.  

**Presenter:** Mark Nielsen, University of Utah

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Workshop 704: How to develop online exercises to help students improve their skills in answering short answer questions (SAQs)
Room F226 repeat of workshop 402

Abstract: When writing summative examinations, some students find it difficult to construct well-organized and concise answers to short answer questions (SAQs). In addition to incorrect physiological information, common errors include poor answer organization as well as the inclusion of accurate but irrelevant information. This workshop will demonstrate the use of Quandary to create interactive exercises that give students practice in developing answers to physiology-based SAQs, using instantaneous instructional feedback, answer choice by answer choice, to help students recognize these errors and improve their SAQ-answering skills. The workshop will finish by engaging participants in the construction of an interactive SAQ exercise.

Presenter: Jackie Carnegie, University of Ottawa

Workshop 705: Thinking outside the box: An introduction to the visual format
Room F100 repeat of workshop 304

Abstract: Good students can excel with the traditional textbook approach to information delivery, but others either struggle to earn a C or D or else fail or drop the course. There is a disconnect between today’s struggling students and the method of information delivery in traditional textbooks. Addressing that disconnect has meant abandoning a format used for >1500 years, as well as most of the traditional publishing methodologies. This workshop will discuss the origins and evolution of traditional and alternative formats, the results of ~100 class tests, the impacts on lecture planning and classroom experiences working from a Visual text.

Presenter: Frederic (Ric) Martini, University of Hawaii at Manoa
Co-Presenter: Judi Nath, Lourdes College

Workshop 706: Walk-on or drive-on portable diagrams to facilitate learning
Room F338

Abstract: Using walk-on or drive-on portable diagrams, body structures and functions are presented in a way that is helpful to all students, especially kinesthetic and tactile learners. Students literally walk on labelled or unlabelled portable diagrams of pathways through the body. Some, like the kidney diagram, incorporate physiological concepts like the role of particle size in the filtration process. Some table-top diagrams using toy cars are useful for smaller laboratory spaces. Larger diagrams may be also used in biology labs.

Presenter: Nancy G. Kincaid, Troy University, Montgomery Campus

Workshop 707: Introducing the new BIOPAC MP45: A budget beating physiology lab solution for community colleges
Room F310 repeat of workshop 404

Abstract: The new handheld MP45 is the latest addition to the Biopac Student Lab family. The powerful, two-channel system works with BIOPAC’s extensive curriculum library and broad range of transducers. The MP45 uses USB connectivity to receive power and transmit data. Like all BSL products, the system is intuitive and extremely robust. There are no knobs, dials or switches to confuse students, just a USB cord and two ports to connect transducers and electrodes. Connect the USB, launch a BSL Lesson and start recording data. Attend the workshop and be amazed by the power, flexibility and budget-beating price.

Presenter: Taj Hudson, BIOPAC Systems, Inc.
Co-Presenter: William McMullen, BIOPAC Systems, Inc.
Workshop 708: Do the dough for mitosis and meiosis
Room F334

Abstract: This is an interactive technique to help students understand the process of mitosis and meiosis. This technique facilitates students to manipulate and observe the process and follow how the chromosomes separate and position in the daughter cells. Also, the technique can enable visualization of the process of crossing over and trace it throughout meiosis until the formation of gametes. The workshop will be relevant to Anatomy and Physiology classes, especially when teaching the cellular level organization.

Presenter: Agus Sofyan, Big Sandy Community and Technical College, Kentucky

Workshop 709: Paper strips and arrow diagrams: Two simple student activities to enhance linear thinking and learning of cause and effect events
Room F206 repeat of workshop 106

Abstract: Paper strips and arrow diagrams can be used to teach students how to practice learning physiological processes that occur in sequential steps. The level of complexity can be varied to meet the needs of students. In this hands-on session, participants will work through examples of both types of activities and then discuss ways to enhance and/or combine them with other active learning exercises.

Presenter: John Koch, John Tyler Community College

Workshop 710: Experiential learning in entry level anatomy and physiology: Evaluating a project focused on nutrition, families and Type 2 diabetes
Room F302

Abstract: Freshman-level anatomy and physiology is currently offered at 16 high schools in Minnesota through the University of Minnesota’s College in the Schools program. A unique experiential learning program focusing on nutrition and obesity-related diseases is taught in these classes. Students learn about the digestive system, read a book authored by Michael Pollin entitled “In Defense of Food” and work in groups on video interview projects to compare the eating habits of older relatives to young adults of today. These videos and other student-generated materials are used to educate the public about healthy eating and disease prevention through the production of information kiosks.

Presenter: Murray Jensen, University of Minnesota

Workshop 711: What's in it for them and us? – Teaching and assessing using classroom response technology (Clickers)
Room F212 repeat of workshop 313

Abstract: Today’s students want to be contributors and active participants in the planning of their own learning. How can we help them learn what and how to study? Timely in-class feedback to student responses on lecture questions, among other pedagogical techniques, proves to be an effective motivator for learning. In this presentation I will share some ways of creating an interactive learning environment while measuring students’ understanding of the lecture material through the use of clickers. Different clicker tricks will be demonstrated. If you are a user of this tool, please come with your own ideas and observations. Clickers will be provided.

Presenter: Santa Makstenieks, Concordia University Wisconsin

Workshop 712: Clarifying expectations and generating meaningful feedback using rubrics
Room F214 repeat of workshop 111

Abstract: Have you ever had students report in their final course evaluations that they had no idea of your expectations of them? Do you find it difficult to clearly articulate to a student why they received a B– rather than the A they were working hard to achieve? In this workshop we will examine the usefulness of grading rubrics in helping us clarify our expectations (both to ourselves and our students) and in providing meaningful feedback that will help students to meet our expectations and achieve the grades they want.

Presenter: Margaret A. Weck, St. Louis College of Pharmacy

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SESSION 8 – Wednesday 2:45am – 3:45pm (60 minutes)

Workshop 801: Accreditation… that was easy!  
Room E115  repeat of workshop 401

Description: Assessment and Accreditation: The dreaded “A” words. If you are wondering: How do we begin this process? How do I get all of my colleagues on board? How do I manage and analyze the data? We will show you how to easily create assessments by choosing pre-populated questions linked to learning outcomes, how to distribute the assignment to every student in every section (no matter how many sections and/or instructors), and how to collect performance results and run reports for the accreditation portfolio. Let us show you how painless it can be.

Presenter: Tracy Young  Middlesex County College  
Co-Presenter: Nahel Awadallah, Johnston Community College

Workshop 802: CPR: Revive writing in your Anatomy and Physiology classroom  
Room E112

Abstract: Are written assignments missing from your Anatomy and Physiology courses because your classes are too large or the grading is overwhelming? If so, then this session is for you! Using a software program called Calibrated Peer Review (CPR) this workshop will demonstrate how you can put writing back into your classroom. Disadvantages of written assignments include time-consuming grading, subjectivity and the lack of student reflection on graded work. CPR addresses all of these issues and more. In addition, one of the most enticing and counterintuitive features of CPR is that the larger the class size, the better this program works.

Presenter: Eric Sun, Macon State College  
Co-Presenter: Donna Balding, Macon State College

Workshop 803: Lessons Learned from My Global Education Projects  
Room F338

Abstract: As educators, we would like to ensure that students are prepared for both academic and professional endeavors in the interconnected and interdependent world of the 21st century. This presentation will highlight anatomy and physiology assignments that incorporate issues of global awareness in their learning objectives. The individual and collaborative assignments are process-oriented and incorporate research, self-reflection and peer-review. The presenter will describe the development and utilization, and the success and limitations of these assignments.

Presenter: Ewa Gorski, Community College of Baltimore County

Workshop 804: Pitfalls and Highlights of Creating Your Own Lab Manual  
Room F334  repeat of workshop 405

Abstract: Your workshop presenter has published four editions of his co-written lab manual. He will discuss the pitfalls of writing your own lab manual and the great highlights in teaching from a manual that is customized to your lab class. The satisfaction outweighs the frustrations. But it’s best if you know what you’re getting into. Once you’ve attended this presentation, you’ll have the perspective and tools that you need to be a great author!

Presenter: Leo B. Stouder, Broward College

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Workshop 805: Quantitative exercises for the anatomy and physiology class
Room F336 repeat of workshop 307

Abstract: Many physiology students are afraid of math, yet must become comfortable with it if they intend to pursue medical or research careers. Infusing mathematical principles in physiology courses is important to give students opportunities to practice basic arithmetic skills such as using conversion factors and to understand written problems and interpret graphs. This workshop presents examples of exercises that apply basic arithmetic skills to physiology, allowing instructors to reinforce quantitative skills with minimal distraction from the underlying physiological concepts. Problem- and answer-generating web pages can create easy in-class activities, generate homework assignments and give your students ample opportunities to practice.

Presenter: Patricia Bowne, Alverno College

Workshop 806: Engaging and assessing online students with innovative technologies and andragogies
Room F206 repeat of workshop 407

Abstract: Online anatomy and physiology instruction must evolve to maximize the potential effectiveness of technological innovations offered by publishers and software companies. This presentation examines one method of assessing potential course materials and how selected resources can be integrated to maximize student engagement for core learning as well as to facilitate student assessment.

Presenter: John Arle, Lane Community College

Workshop 807: An integrative alcohol physiology lecture to address problem drinking
Room F302

Abstract: Irresponsible alcohol use undermines college students’ learning potential. The reasons for problem drinking are complex, but one contributor may be the ignorance of most alcohol users about the scientific basis underlying its effects. Physiologists are in an ideal position to enlighten college students, faculty and staff in this regard. This workshop presents and discusses an integrative alcohol physiology lecture that has been delivered to over a hundred interested audiences, including college, high school and professional students, as well as parent groups, faculty workshops and professional organizations. Irreverent humor, insightful explanations and sobering facts are used to stimulate thinking about responsible drinking.

Presenter: Kevin Strang, Department of Physiology, University of Wisconsin-Madison School of Medicine and Public Health

Workshop 808: Techniques to help your students ‘get’ histology
Room F306 repeat of workshop 311

Abstract: One of the most difficult skills for anatomy and physiology students to learn is to identify tissues viewed microscopically. In this workshop we will present different techniques to help students develop this skill. This workshop is especially intended for people teaching pre-health science anatomy or anatomy and physiology. Participants are encouraged to share their own successful techniques.

Presenter: Robert Leopard, Monroe Community College

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Workshop 809: **Course policy: Cell phone use encouraged in class!**  
Room F200  repeat of workshop 409

**Abstract:** Personal Response Systems or ‘clickers’ have become a valuable form of instructor-student interaction, in particular for large classroom settings. In this workshop we will describe a new clicker-like technology, Top Hat Monocle, whereby students use their own cell phones, smart phones or laptops to answer questions posed by the instructor in real time. The advantages of Top Hat are that students can engage by answering several forms of questions in addition to interacting with graphical demonstrations, which increases student engagement. Participants will have the opportunity to interact with Top Hat and experience the unique features of the technology.

**Presenter:** Daniel Belliveau, Department of Anatomy and Cell Biology, University of Western Ontario  
**Co-Presenter:** Mohsen Shahini, Top Hat Monocle

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Workshop 810: **Face transplants: A case study exercise with interdisciplinary and cross-institutional elements**  
Room F202

**Abstract:** Face transplants are new and highly-publicized surgical procedures. In this workshop we will discuss the historical, psycho-social and medical aspects of face transplants, emphasizing the use of these intriguing cases as course resources and in interdisciplinary instruction. How face transplant cases may be used jointly in anatomy and physiology and psychology courses will be discussed. Anatomy and physiology case study exercises have focused on skull, muscle and nerve damage and reconstruction issues. Psychology assignments have focused on issues related to identity and emotive aspects of facial structure. Both types of classes have also posted video presentations to a dedicated Facebook page where students discussed and commented on collected materials. The results of evaluations of the exercise will also be presented.

**Presenter:** John Robertson, Westminster College  
**Co-Presenter:** Carla Bluhm, College of Coastal Georgia

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Workshop 811: **Use of problem based learning for anatomy and physiology studies**  
Room F214

**Abstract:** Teaching Anatomy and Physiology or Advanced Physiology is always a big challenge. The majority of students who try to memorize the difficult study material continue to lose their engagement as they have to absorb progressively more information throughout the semester. Our experiences have proven that incorporation of Problem Based Learning (PBL) enhances the learning process and enlivens the details taught in the classroom. Using PBL facilitates greater student engagement in their learning. Incorporating into lecture material applicable cases or problems makes the subject of study much more attractive to all students.

**Presenter:** Dalia Giedrimiene, Saint Joseph College
ROYAL BC MUSEUM

HAPS 2011 Conference
Sunday, May 29th 6:30-9:30

The Royal BC Museum is located in on the Inner Harbour of downtown Victoria, next door to the parliament buildings and the Empress Hotel. Founded in 1886, the RBCM represents British Columbia’s combined provincial museum and archives. The museum houses several large permanent exhibits in addition to an extensive collection of historical artifacts, documents, and natural history specimens.

The HAPS 2011 museum visit will provide conference participants with exclusive access to the First People’s Gallery and the Modern History Gallery. The First People’s gallery reveals glimpses into the lives of the aboriginal First Nation’s people who have occupied coastal BC for over 10,000 years. The Modern History Gallery allows you to experience the sights, sounds and smells of Victoria as it was several hundred years ago.

As you wander the exhibits, you will sample a selection of BC culinary treats, themed to the exhibits and paired with BC wines and locally brewed beer. This is a unique opportunity to learn a little about the history of Canada’s west coast and to sample some delectable local food in a magical setting.

Check out the Royal BC Museum link for more information:

http://www.royalbcmuseum.bc.ca/Exhibit_Gall/default.aspx
The mild marine climate in the Victoria area is extraordinarily well suited to gardening, and Victoria is widely known as Canada’s garden city. Butchart Gardens, located on Todd Inlet just 20 minutes north of Victoria, is one of the world’s premier floral gardens. This garden draws thousands of visitors from every corner of the world and will take at least a half day to explore and fully appreciate.

The gardens were established in 1904 on the site of a former limestone quarry. Several distinctive gardens in the style of the grand estates of the period were initially developed. The gardens have since expanded to occupy 22 ha (55 acres) and to encompass over 8500 trees and more than 180 species of plants. The many acres of unique, immaculately constructed, themed gardens are a feast for the senses, and are absolutely magnificent in June.

The majority of time at the gardens will be spent walking down the flower lined paths and viewing the spectacle of colour and design. You can meander at your own pace taking time to smell the roses or one of the many other flower varieties you will encounter. Almost all of the Butchart Gardens are wheelchair accessible and there are plenty of conveniently placed benches where you can stop to rest your feet for a few minutes.

The Butchart Gardens offers unique dining opportunities. There are 2 restaurants on site, in addition to smaller concession stands throughout the gardens. If you would like to make meal time fun, you can order a pre-packed picnic lunch and find your own little slice of heaven to enjoy it in.

Butchart Gardens also offers live entertainment. Small bands play in different parts of the gardens throughout the day. There is also a large band shell on site where larger acts play, including the occasional major headliner! Consult their website for details:

http://www.butchartgardens.com
“The MSHAPI approach is unique – it starts with a student already educated in A&P course content and builds on that foundation, creating a highly trained instructional specialist for the undergraduate A&P lecture room and laboratory.”

Michael Mestan, D.C.
NYCC Executive Vice President of Academic Affairs

NYCC’s Master of Science in Human Anatomy and Physiology Instruction (MSHAPI) program is uniquely designed for those with a professional healthcare or advanced biology degree. The course of study builds on existing anatomy and physiology knowledge base, transforming the student into an exceptional A&P instructor for the undergraduate level of higher education.

This masters degree program is offered online, providing all the advantages of the online educational environment important to advanced learners. It has components that:

- Assure competency over the entire spectrum of undergraduate anatomy and physiology instruction
- Provide a sound foundation in instructional theory and practices
- Allow for a measure of specialization through selection of elective courses

Contact the Admissions Office at 800-234-6922 or visit us at www.nycc.edu.
"Formative haptics" is the term we have given to the learning approach that recruits the hand to enhance the learning process. This approach enables learners to dynamically shape and reshape a form with their hands as they seek to model its meaning.

2011

Call for Papers

The Formative Haptics Institute aims to collect and disseminate a growing body of research that explores the power of hands-on learning. We are calling for research that supports the notion that information gained actively or purposefully by the hand through formation and modification of an object, leads to dynamic evaluations of logic, potential and possibility.

We invite you to share ideas, research, papers, articles, and teaching techniques that support formative haptic approaches to anatomy education. Formative haptic methodologies in the classroom range from classical approaches such as drawing, painting, sculpting, collage and assemblage to other hands-on approaches not yet imagined. We are seeking research on original approaches that have the power to transform the study of anatomy from a traditionally difficult exercise in memorization to an intuitively memorable, profound, and dynamic experience in learning.

All shared ideas and research will be considered as additions to the Formative Haptic Institute's growing body of literature. We will recognize your contributions and will endeavor to protect your authorship. The Institute is committed to testing and improving formative haptic classroom applications and is willing to provide you with the tools necessary to collect quantitative data for peer-reviewed research. It is our hope that we can support your contributions to the education world. Please join us as we expand upon the growing body of research on Best Practices in anatomy education.