This newsletter provides an excellent opportunity for us to take a brief look back – and a long look forward – for our young department, now five years old. In 2008, we started a journey to build an outstanding new department in the Medical School. In week one, we held a retreat to lay out our mission, founded on the standard of excellence. We seek, expect and are achieving excellence in all phases of our mission, including in new knowledge discovery and knowledge dissemination. We take great pride in our distinct and critical role in the medical school. Our research vision is unique, beginning with the quest for new knowledge at the gene, molecule, and test tube level, and ending with impactful discovery at the whole animal level. We embrace biological complexity and avail ourselves of every tool of biology, ranging from genome editing to spatio-temporal gene modification as we garner new mechanistic insights into cell, tissue and organ function in living animals. Our ultimate goal is to inform a mechanistic basis for human disease and we believe that through improved mechanistic integrative biological understanding, novel therapeutic strategies for disease remediation are possible.

We seek, expect and are achieving excellence in all phases of our mission.

The realization of our goal requires a clear and unwavering sense of purpose. Our research vision focuses on new knowledge discovery in cardiovascular biology (including muscle), as well as in obesity, diabetes and metabolism. These fields are ideally suited for an integrative biology and physiology approach, as they require the gene-to-whole-organism paradigm to best inform insights into disease mechanisms. This focus is very much in line with key pillars of the Medical School and fully complements key partnering departments, centers and institutes at the University of Minnesota.

How are we doing? Since our start in 2008, we have successfully recruited four outstanding new faculty to IBP. Alessandro Bartolomucci joined our faculty in 2009 and has already made great advances in a new VGF-derived peptide TLQP-21 that has the potential (continued on page 2)
Drs. Stephen Katz and Vincent Barnett continue to aid in enhancing IBP’s spectacular contributions to knowledge dissemination and education. Last year IBP faculty taught over 3,000 students, ranging from undergraduate to graduate, professional and medical students. We also are proud to have outstanding teaching track faculty that routinely garner top lecturer recognition from their students. Students vote with their feet – and they are voting that IBP classes and faculty are outstanding!

Starting a new department is like taking an expedition to Mt. Everest. We share the great excitement that stems from the huge opportunities and challenges that await us.

Great faculty are enlivened by outstanding facilities to reach the top of their field. This summer IBP research faculty moved into spectacular new research facilities in the Biomedical Discovery District located in the northeast corner of the campus. (Pictured above.)

Along with recruiting new faculty, in 2009 we started a new Ph.D. granting program in integrative biology and physiology. Under the strong leadership of John Osborn, the IBP Ph.D. program has taken flight. We currently have 13 graduate students with two now entering their fifth year. Of note, we are very pleased that we placed three MSTP students in IBP mentored labs – tangible evidence of our new program’s impact.

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Starting a new department is like taking an expedition to Mt. Everest. We share the great excitement that stems from the huge opportunities and challenges that await us. Likewise, IBP is strongly positioned and resolutely striving upwards from our firm foundation at Everest base camp. Our destination is clear: to reach the summit and be the best integrative biology and physiology department in the country.

In closing, IBP – Hats Off to Thee! We are off to a great start in fulfilling our mission in this first five years and are excited to see the next five years unfold as we go forward.

Joseph M. Metzger, Ph.D.,
Maurice B. Visscher Endowed Chair in Physiology
Professor and Head, Department of Integrative Biology and Physiology

**IBP MISSION**

Dedicated to an integrative systems biology approach to bio-medical discovery. We partner with colleagues across disciplines to investigate questions ranging from the gene/molecule to the intact animal, while striving for excellence in research and dissemination of new knowledge with local, national and global impact.

Committed to mentoring and training graduate students. We empower students to develop a deep understanding of the complexity of physiological systems to enable them to pursue unique career pathways spanning from academia to bio-industry.

Devoted to excellence, innovation and scholarship in education. We educate students in the integration of structure and function of cells, organ systems, and living animals, providing a strong foundation for knowledge discovery in basic science and human health fields.
MEET OUR NEW GRADUATE STUDENTS

MAYANK VERMA
I grew up in the Twin Cities and graduated from the University of Minnesota in 2009 with a B.S. in microbiology. I then joined the Medical Scientist Training Program in 2011 at the U of M and picked IBP as my graduate department. I will be conducting my thesis under Dr. Atsushi Asakura. I am currently investigating the interaction between the vasculature and muscle stem cells, hoping to use the knowledge to come up with vascular-targeted therapies for muscle disease protease 2A-cleaved dystrophin.

MATTHEW WHEELWRIGHT
I grew up in San Jose, Calif., and graduated from UCLA in 2010 with a B.S. in neuroscience. While I was there, I had the opportunity to spend extended periods of time doing research and volunteering in a clinical environment. I chose to pursue an M.D. and a Ph.D. in the combined program here at Minnesota. I am working in Dr. Metzger’s lab, using cardiac myocytes derived from iPS cells to study cardiomyopathy.

AMRITHA YELLMILLI
I was born and raised in California and graduated from Virginia Commonwealth University (VCU) in 2011 with a B.S. in biology. During the school year, I worked in Dr. Robert M. Tombe’s lab where we studied the role of Ca2+/Calmodulin dependent protein kinase-II (CaMK-II) in cilia during zebra fish development. For two summers, I worked in the Human Exposure Laboratory at UCSF studying the role of osteopontin in asthma. After graduating from VCU, I joined the Medical Scientist Training Program at the University of Minnesota. I have chosen to complete my graduate studies in Dr. DeWayne Townsend’s lab.
The education mission of the Department of Integrative Biology and Physiology (IBP) is accomplished in anatomy and physiology classes aimed at undergraduate, graduate and professional students. We continue to see increased demand for our classes. For the year ending in June 2013, the sum of all of our physiology and anatomy classes yielded total tuition revenue of over $5,700,000; an 8 percent increase from the year before. More than 3,000 students enrolled in almost 50 IBP classes last year.

The Lifson/Johnson Memorial Award is sponsored by IBP and recognizes excellence in teaching by undergraduate or graduate students. This year we gave two awards: one to Nathan Zaidman, a second year IBP Ph.D. graduate student who excelled as a teaching assistant in PHSL 3061, and one to Rebecca Asp, who excelled as a teaching assistant in our very large undergraduate survey course, PHSL 3051.

IBP, in conjunction with the Medical School and the Department of Biomedical Engineering, recently purchased and assembled 26 new BIOPAC workstations and computer systems for IBP lab classes. The nearly $100,000 pricetag will now allow 26 simultaneous small groups of students to acquire and record real-time data, perform data analysis and present their results. We are grateful for support from the Medical School to help make this purchase possible.

The 2012-2013 academic year began with the election of new officers of the Undergraduate Physiology Society (UPS): Hannah Dotterman, President; Maria Bollensen, Vice President/Treasurer; Elizabeth Maring, Public Relations; Josh Hass, Historian; and Tyler Klund, Web Master. The group maintained an active fall schedule with monthly meetings featuring faculty speakers or student networking/social events. In addition to their regular meeting schedule, UPS also sponsored a speaker for undergraduate AMSA-led Bioethics Week. The speaker discussed how culture and heritage can inform a person’s perspective on natural resources, using the example of Native Americans of Northern Minnesota and their spiritual connection to wild rice. UPS members again joined with IBP faculty, staff and graduate students to march in the Homecoming parade and shared their “Minnesota Style” parody of the viral “Gangnam Style” video. The final meeting of the fall semester featured a holiday cookie decoration event and bad holiday sweater competition judged by Dr. Katz. With all of the 2012-2013 officers graduating, spring elections produced an entirely new executive board for the 2013-2014 school year. Ben Pilkey, President; Christine Hardee, Vice-President/Treasurer; Christina Chanthamontry, Public Relations; Joshua Warneke, Advertising chair; and Joel Peterson, Web Administrator.

Top undergrad scholar awardee Allison Spicher (pictured left) received an award at the 2013 Visscher Symposium with a plaque acknowledging her superior academic achievement. Alison completed the physiology major at the top of her graduating class with a GPA of 3.91. Way to go, Allison!

The fall semester dean’s honor rolls included 45 physiology majors! Total number of physiology majors: 288.

The annual participation of UPS in for the Relay for Life Cancer Charity raised a UPS record $2,000 for the event! Many thanks to all who contributed.
State Fair 2013
Above top: Jane Barnard and son, Francis, enjoying the IBP exhibit; Above bottom: Dr. Townsend explains heart to State Fair goers.

Graduate Student Welcome Party 2013
Above: Poster session at Coffman Union. Right: Dr. Mary Garry discussing a poster.
Top left: Anthony Vetter receives merit award from Dr. John Osborn. Left: IBP graduate students in conversation with Dr. Osborn, DGS.

IBP faculty, staff, and students 2013

Cardiopalooza 2013
Above: Poster session at Coffman Union. Right: Dr. Mary Garry discussing a poster.
Top left: Anthony Vetter receives merit award from Dr. John Osborn. Left: IBP graduate students in conversation with Dr. Osborn, DGS.

State Fair 2013
Above top: Jane Barnard and son, Francis, enjoying the IBP exhibit; Above bottom: Dr. Townsend explains heart to State Fair goers.

Visscher Symposium 2013
Above: Dr. Marvin Bacaner, Prof. Emeritus, Dr. Osborn and Mrs. Bacaner. Right top: Dusty Moore, Jason Foss and Maria Razzoli; Right: Keynote Speaker Dr. Takahashi at reception.
IBP SNAPSHOT 2012 - 2013

FACULTY

- 2 Endowed chairs
- 6 Teaching track faculty
- 3 Tenure Track faculty
- 4 Tenured faculty

13 TOTAL FACULTY

23 NEW PUBLICATIONS

SPONSORED FUNDING

- 5 R01’s
- 1 Mayo Partnership
- 1 Merit
- 16 Other

$4,209,152 TOTAL GRANTS

TEACHING

- 19 U-grad courses
- 25 Graduate courses
- 2 Medical courses
- 4 Professional courses

$5,773,492 TOTAL TUITION

SAVE THE DATE FOR THE 6TH ANNUAL VISSCHER SYMPOSIUM, MAY 22, 2014

Featuring Dr. Helen Hobbs, UT Southwestern

Dr. Helen Hobbs is a pre-eminent researcher who studies the genetics of cholesterol metabolism at UT Southwestern Medical Center in Dallas, Texas. She is the director of the Eugene McDermott Center for Human Growth and Development and a Howard Hughes Medical Institute investigator. We look forward to welcoming Dr. Hobbs as the keynote speaker for the sixth annual Visscher Symposium on Thursday, May 22, 2014. Watch for event details at: physiology.med.umn.edu.

MAKE A GIFT TO IBP

The generosity of individuals who recognize the importance of our department’s work is indispensible to our success. Donate online at www.mmf.umn.edu/give and select MMF fund #6819.