General Faculty Meeting

Tuesday, November 29, 2011
12:00 p.m.
Pavilion A Auditorium
COM General Faculty Meeting
November 29, 2011

• Announcements
  – Faculty Council Membership
  – Rules of the Faculty Proposed Change
  – SACS—Quality Enhancement Plan (Dr. Diane Snow)

• Dean’s Update
  Dr. Frederick C. de Beer

• CTSA
  Dr. Philip Kern

• Curricular Revision Update
  Dr. C. Darrell Jennings, Jr.
Faculty Council 2010-2011

CHAIR: Brenda G. Fahy, M.D., 2009-2012
Anesthesiology

BASIC SCIENCE MEMBERS:

James Geddes, Ph.D. 2009-2012
Anatomy and Neurobiology

Brian Jackson, Ph.D. 2009-2012
Physiology

Davy Jones, Ph.D. 2008-2011
Toxicology

Nancy E. Schoenberg, Ph.D. 2008-2011
Behavioral Science

Glenn C. Telling, Ph.D. 2010-2013
Microbiology, Immunology & Molecular Genetics

CLINICAL SCIENCE MEMBERS:

Jayakrishna Ambati, M.D. 2008-2011
Ophthalmology and Visual Science

Hubert O. Ballard, M.D. 2008-2011
Pediatrics

Franca Cambi, M.D., Ph.D. 2010-2013
Neurology

Thomas E. Curry, Ph.D. 2008-2011
Obstetrics and Gynecology

Brenda G. Fahy, M.D., 2009-2012
Anesthesiology

Christopher A. Feddock, M.D. 2010-2013
Internal Medicine

Joe Springer, Ph.D. 2010-2012
Physical Medicine and Rehabilitation

Ex-officio: Martha Peterson, Ph.D.
Microbiology, Immunology & Molecular Genetics
Faculty Council 2011-2012

CHAIR: Brian Jackson, Ph.D. 2009-2012
Physiology

BASIC SCIENCE MEMBERS:

Lee X. Blonder, Ph.D., 2011-2014
Behavioral Science

Subbarao Bondada, Ph.D., 2011-2013
Microbiology, Immunology and Molecular Genetics

James Geddes, Ph.D. 2009-2012
Anatomy and Neurobiology

Brian Jackson, Ph.D. 2009-2012
Physiology

Daniel J. Noonan, Ph.D., 2011-2014
Molecular and Cellular Biochemistry

CLINICAL SCIENCE MEMBERS:

Franca Cambi, M.D., Ph.D. 2010-2013
Neurology

John D'Orazio, M.D., Ph.D., 2011-2014
Pediatrics

Brenda Fahy, M.D., 2009-2012
Anesthesiology

Christopher A. Feddock, M.D. 2010-2013
Internal Medicine

Paul Kearney, M.D., 2011-2014
Surgery

Peter Nelson, M.D., Ph.D., 2011-2014
Pathology and Laboratory Medicine

Joe Springer, Ph.D. 2010-2012
Physical Medicine and Rehabilitation
Proposed COM Faculty Rules Change

In response to LCME standard MS-4:

Revised standard MS-4: The final responsibility for accepting students to a medical school must rest with a formally constituted medical school admission committee. The authority and composition of the committee and the rules for its operation, including voting privileges and the definition of a quorum, must be specified in bylaws or other medical school policies. Faculty members must constitute the majority of voting members at all meetings.
Article II, Section 3.43 B. Membership:

The Committee shall have at least 20 members, the Chair, and the Associate Dean for Admissions and Institutional Advancement. The membership shall be distributed according to the following criteria:

1. Students (each year up to three third-year students shall be appointed for a two-year term);
2. Community representatives (up to two community representatives will be appointed, at least one of whom will be a community physician);
3. At least fourteen faculty members representing both basic sciences and clinical sciences;
4. The Faculty Council each academic year will either appoint one of its own elected members to the Admissions Committee (if a Council member is not already a member of the committee), or provide for the Chair of the Admissions Committee to attend a Faculty Council meeting to report on the activities and concerns of the committee.
5. Faculty members must constitute the majority of voting members at all meetings.
Our QEP is MCXC! What in the world is that?

Dr. Deanna Sellnow and Dr. Diane Snow, Co-Chairs
What is a QEP?

- **Quality Enhancement Plan**
- One of **12 core requirements** for SACS Reaffirmation of Accreditation:
- “... _a carefully designed course of action that addresses a well-defined and focused topic or issue related to enhancing student learning_” (SACS Handbook for Reaffirmation of Accreditation, 2007, p. 3).
What is our QEP?
• Multimodal Communication Across the Curriculum (MCXC)

Why am I here today?
• To inform you about the QEP and generate enthusiasm
• How did we get to where we are today?
Fall 2009: Pre-Planning Team Developed Plan and Timeline

Spring & Summer 2010: Topic Selection Team Collected Big Ideas and Identified 6 Themes

Fall 2010: Topic Selection Team Examined Proposals, Invited White Papers, and Forwarded Four

Spring 2011: Document Development Team is Now Drafting the 100-QEP Document for SACS
Why Multimodal Communication Across the Curriculum?

5 good reasons.
Reason #1) It’s what employers want.

Association of American Colleges and Universities (Hart, 2007)
Reason #2) 2009 Follow-up . . .

• “[Only] one in four employers thinks . . . colleges are doing a good job” (p. 2).

• 89% said colleges should place greater emphasis on developing students’ “ability to effectively communicate orally and in writing” (p. 9).

• 81%: critical & analytical reasoning skills
Reason #3) UKCore

Design principle #3 (vertical integration)

Learning outcome #2 (written, oral, and visual communication)

Reason #4) Graduation Writing Requirement (GWR)

Communication Requirement in the Major (CRM)
Reason #5) We’re unique
Sounds good, but what will this MCXC actually look like?
Faculty Development
• To help design communication-based instruction, assignments, and assessment tools

Student Tutoring
• To help create and refine classroom communication projects (flat/static print, face-to-face, digital/online)
Fall 2011:
Draft QEP
PR Campaign
QEP Updates

Spring 2012:
Vet, revise, and finalize the QEP

Fall 2012:
Approval Process

January 2013:
Due to SACS!

April 9-11, 2013:
SACS Team Visit
Ideas?
Questions?
www.uky.edu/SACS
COM Senior Leadership

Frederick C. de Beer, M.D.  
Dean & Vice President for Clinical Academic Affairs

Robert T. Means, Jr., M.D.  
Executive Vice Dean

Michael B. Reid, Ph.D.  
Senior Associate Dean for Biomedical Science

Alan Daugherty, Ph.D., D. Sc.  
Senior Associate Dean for Research

C. Darrell Jennings, Jr., M.D.  
Senior Associate Dean for Medical Education

Paul DePriest, M.D.  
Senior Associate Dean for Clinical Affairs

James Norton, Ph.D.  
Associate Dean for Educational Engagement

Charles H. Griffith, III, M.D.  
Associate Dean for Student Affairs

Carol Elam, Ed.D.  
Associate Dean for Admissions & Institutional Advancement

Robert T. Means, Jr., M.D.  
Associate Dean for Veteran Affairs
## Our People: By the Numbers

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
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<tbody>
<tr>
<td>Medical Students</td>
<td>473(^1)</td>
</tr>
<tr>
<td>Graduate Students</td>
<td>227</td>
</tr>
<tr>
<td>Postdoctoral Fellows</td>
<td>136</td>
</tr>
<tr>
<td>House staff (Residents and Fellows)</td>
<td>535</td>
</tr>
<tr>
<td>Basic Science Faculty (Full Time)</td>
<td>203</td>
</tr>
<tr>
<td>Clinical Science Faculty (Full Time)</td>
<td>603</td>
</tr>
<tr>
<td>Affiliated Faculty (Voluntary)</td>
<td>1,023</td>
</tr>
<tr>
<td>Staff</td>
<td>2,071</td>
</tr>
<tr>
<td>Alumni (^2)</td>
<td>9,126</td>
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</tbody>
</table>

\(^1\) Includes entering Class of 2011. Class size is 113 with some variances from year to year.

\(^2\) Includes graduates of MD, graduate research and house staff programs.
College of Medicine Departments

Basic Science (8)
- Anatomy & Neurobiology
- Behavioral Science
- Microbiology, Immunology & Molecular Genetics
- Graduate Center for Toxicology

Clinical Science (17)
- Anesthesiology
- Radiology
- Emergency Medicine
- Family and Community Medicine
- Internal Medicine
- Neurology
- Neurosurgery
- Obstetrics and Gynecology
- Ophthalmology and Visual Sciences
- Graduate Center for Nutritional Sciences/Human Nutrition
- Molecular & Biomedical Pharmacology
- Molecular & Cellular Biochemistry
- Physiology
- Orthopaedic Surgery
- Otolaryngology—Head and Neck Surgery
- Pathology & Laboratory Medicine
- Pediatrics
- Physical Medicine and Rehabilitation
- Psychiatry
- Radiation Medicine
- Surgery
### Benchmark Against Public Medical Schools

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
<th>Percentile</th>
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<tr>
<td>Medical Students</td>
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<td>25</td>
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<tr>
<td>Graduate Students</td>
<td>220</td>
<td>45</td>
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<tr>
<td>Postdoctoral Fellows</td>
<td>134</td>
<td>55</td>
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<tr>
<td>Total Full Time (FT) Faculty</td>
<td>806</td>
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<tr>
<td>Basic Science (FT) Faculty</td>
<td>203</td>
<td>85</td>
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<tr>
<td>Clinical Faculty</td>
<td>603</td>
<td>35</td>
</tr>
<tr>
<td>Category</td>
<td>Amount</td>
<td>Percent of Total Revenues</td>
</tr>
<tr>
<td>----------------------------------------------</td>
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<tr>
<td>Total Revenue</td>
<td>$530,773,261</td>
<td>100</td>
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<td>Practice Plan Revenue</td>
<td>$216,263,975</td>
<td>41</td>
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<tr>
<td>Clinical Enterprise Support</td>
<td>$103,879,490</td>
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<tr>
<td>Total Federal Research Grants and Contracts</td>
<td>$88,022,986</td>
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<tr>
<td>State Support</td>
<td>$34,558,042</td>
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<td>Gifts and Endowment Revenue</td>
<td>$17,517,517</td>
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<tr>
<td>Tuition &amp; Fees Revenue</td>
<td>$17,770,869</td>
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<tr>
<td>Other</td>
<td>$52,760,382</td>
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</table>
Current Budget

- FY 2012 budget includes:
  - 59 growth in faculty from April FY 2011
  - 116 growth in staff and trainees from April FY 2011
  - 33 additional residents from April FY 2011

- Recurring reduction in state funds $1.2 million (2.21%)
Clinical partnerships help grow affiliated faculty programs, increase student clinical experience opportunities and foster translational research.

The success of UK HealthCare’s clinical growth has allowed the Enterprise to fund educational and research efforts within the College of Medicine. This has been a particular benefit in light of current economic conditions and extramural funding.

- At $103.8 million, Clinical Enterprise support accounts for 20 percent of the College’s revenue for the current fiscal year — more than double the support received from government and parent sources ($34.5 million).
CoM Enterprise Investments

($'s in 000's)

* Reduction due to impact of PSP/IPSP
Current Challenges Facing the College

• Class size is comparatively small
  - UKCOM is smaller than U of L and projection for Pikeville

  – Response: Proposal to increase class size
    • Maximize efficiency of space utilization
    • Develop curricular tools to allow less space-intensive education
    • Leverage Norton affiliation for clinical training
Current Challenges Facing the College

• Affordability of medical education
  – Tuition for entering class of 2011
    • Residents: $31,907
    • Non-residents: $58,553
Current Challenges Facing the College

• Availability of space
  – Cited by LCME as an area of non-compliance
  – Hinders the ability to increase class size
  – Impedes growth of regional sites
  – **Response:** Evaluating re-purposing of current COM and hospital space for education
    • Develop less space intensive education processes
      – Web/Internet conduit-based programs
  – Prevents growth of research program
  – **Response:** Evaluation of research space utilization as part of research strategic planning process
Current Challenges Facing the College

• Need for curriculum change

  – Need to develop organ/system based curriculum

  – Response: New curriculum implementation process underway
Strategic Issues Facing the College

• Decreasing state funding to UKCOM

  – Response: Maximize efficiency of management of UK COM operational units
    • Eliminate unnecessary duplication of functions
    • Align compensation with institutional goals
Strategic Issues Facing the College

• Research funding is at risk
  - History of increasing extramural funding
  - UK has traditionally focused on individual investigators rather than program development
  - This places UK at greater risk in the current/future environment of declining NIH support
  - Response: New strategic planning-driven approach to investments in faculty
Strategic Issues Facing the College

- Changes in healthcare reimbursement adversely impacting ability of UKHC to support COM
  - Response: Restructure clinical faculty reimbursement to incentivize clinical productivity
    - Standardize approaches to clinical management
    - Focus on quality and patient satisfaction
    - Metrics-driven improvement of practice management efficiency
Strategic Issues Facing the College

• Endowments
  – Underwater
UK Center for Clinical and Translational Science
Impact of NIH CTSA

Center:
• CCTS: Center for Clinical and Translational Science

NIH grant:
• CTSA: Clinical and Translational Science Award

Title of project on grant:
• Kentucky Center for Clinical and Translational Science
Increase the pace, effectiveness, and quality of translational research at UK and in the surrounding Appalachian community, which will ultimately result in better health for the citizens of this region.
Overall mission of the CCTS

- **Aim 1.** new outreach pathways to confront chronic health issues in rural Appalachia
- **Aim 2.** Develop innovative methods to champion collaborative team science
- **Aim 3.** Educate and excite the next generation of clinical and translational scientists
- **Aim 4.** Strengthen the development of biomedical informatics
May 31, 2011: Notice of Grant Award
   • 1 UL1 RR033173-01
   • 1 TL1 RR033172-01 Pre-doc scholars
   • 1 KL2 RR033171-01 Post-doc scholars

June 1, 2011: Project Start Date
   • Per RFA, earliest state date: July 1, 2011

November 21, 2011: External Advisory Board Retreat

November 22, 2011: NIH Site Visit

January 1, 2012: Annual Report
   • Covers period: June 1 – December 31, 2011

June 1, 2011 – February 29, 2012: First Project Year Period
# CTSA Key Functions/Cores

<table>
<thead>
<tr>
<th>Function / Core</th>
<th>Lead Contact</th>
<th>Department</th>
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<tbody>
<tr>
<td>CCTS Administration</td>
<td>Philip Kern, MD</td>
<td>Medicine</td>
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<tr>
<td>CCTS Portal [UK]</td>
<td>Jeffery Talbert, PhD</td>
<td>Pharmacy</td>
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<tr>
<td>Regulatory Support &amp; Research Ethics</td>
<td>Robert T. Means, MD</td>
<td>Medicine</td>
</tr>
<tr>
<td>Clinical Research Center (CR-DOC)</td>
<td>Leslie Crofford, MD</td>
<td>Medicine</td>
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<tr>
<td>Biostatistics &amp; Research Design</td>
<td>Richard Kryscio, PhD</td>
<td>Public Health</td>
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<tr>
<td>Biomedical Informatics</td>
<td>Todd Johnson, PhD</td>
<td>Public Health</td>
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<tr>
<td>Pilot Studies</td>
<td>Charlotte Peterson, PhD</td>
<td>Health Sciences</td>
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<td>Thomas Curry, PhD</td>
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<tr>
<td>Novel Methodologies</td>
<td>Greg Gerhardt, PhD</td>
<td>Medicine</td>
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<tr>
<td>Translational Technologies</td>
<td>Michael Reid, PhD</td>
<td>Medicine</td>
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<tr>
<td>Education &amp; Career Development</td>
<td>Thomas Kelly, PhD</td>
<td>Medicine</td>
</tr>
<tr>
<td>Community Engagement</td>
<td>Mark Dignan, PhD</td>
<td>Medicine</td>
</tr>
<tr>
<td>Risky Behaviors /Substance Abuse [UK]</td>
<td>Carl Leukefeld, DSW</td>
<td>Medicine</td>
</tr>
<tr>
<td>Drug Development [UK]</td>
<td>Linda Dwoskin, PhD</td>
<td>Pharmacy</td>
</tr>
<tr>
<td>Tracking &amp; Evaluation</td>
<td>Ramona Stone, PhD</td>
<td>Public Health</td>
</tr>
</tbody>
</table>
What can the CCTS do for you?

- Clinical Services Core (CR-DOC)
  - Skilled research nursing
  - Coordinator services
  - Phlebotomy, IV infusions, research procedures
  - Research inpatient studies

- Regulatory/financial support
  - Assist with IRB submission
  - Assist with budget
  - DSMB
What can the CCTS do for you?

- Biostatistics and study design
  - Help with grant submissions
  - Data post-hoc analysis
- Informatics
  - Set up RedCap database
  - Analysis of array data
  - Analysis of imaging data
  - Problem solving large data sets
Education/career development
  - Certificate in Clinical Research
  - MS and PhD program in Clinical Research
  - TL1 trainees (pre-doc program)
  - KL2 scholars (usually Asst Prof, protected time)
Disparities, poverty, substance abuse

Cancer mortality

Diabetes prevalence

Opioid analgesic abuse

Poorest counties
Community Engagement
- Develop studies that target disparities in the community
- Community based participatory research
- Practice-based research/comparative effectiveness
What can the CCTS do for you?

- Pilot studies
  - New investigator grants
  - Novel methodologies/collaborative grants
  - Community engagement grants
  - Joint community engagement grants with Ohio State
  - Joint pilot grant with Marshall University
  - Drug development grants
Network building

Univ of Cincinnati
Morehead Univ
Univ of Kentucky
Ohio State Univ
West Virginia Univ
Marshall Univ
Pikeville College
Appalachian State Univ

Map by: Appalachian Regional Commission, March 2010.
U.S. Bureau of Economic Analysis, REELS, 2007;
U.S. Census Bureau, 2000 Census, SF3.

Effective October 1, 2010 through September 30, 2011.
New Opportunities and New Responsibilities

CTSA Consortium - collaborative activities with other institutions
- http://www.ctsaweb.org/
- CTSA Wiki
- CTSA Consortium Key Function Committees and Meetings
- CTSA Consortium Initiatives and Projects

CTSA Competitive Renewal
- New NIH grants
- New collaborations
- Career development
- Publications

CCTS investigators: please be sure to include citation of CTSA support in your publications and presentations:

UL1RR033173
Innovations

- Continued development of the Appalachian Translational Research Network (ATRN)
- Expansion of ATRN to West Virginia University
- Spring Summit: focus on Neurosciences
- Sample acquisition: collaboration with regional medical centers
- Partnership with Kentucky Homeplace
- Development of biobank
Challenges going forward

- Fostering transdisciplinary research
  - CATalysts
  - Thematic collaborations
  - Continued vigilance; opportunities

- Helping investigators get NIH funding
  - CCTS is rapidly becoming a collaborator on other grants

- Development of a biobank

- Citation of the CTSA grant on papers
Curricular Revision Update

C. Darrell Jennings, M.D.
Senior Associate Dean for Medical Education
## Proposed First-Year Curriculum

<table>
<thead>
<tr>
<th>August 1 Week</th>
<th>August-October 9 Weeks</th>
<th>November-January 13 Weeks</th>
<th>February-April 13 Weeks (Inc. SB)</th>
<th>May-June 9 Weeks</th>
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<tbody>
<tr>
<td>Orientation</td>
<td>Human Structure and Development (Anatomy/Embryology)</td>
<td>Cellular Structure and Function (Biochemistry/Genetics) Nutrition</td>
<td>Pathology Pharmacology Microbiology</td>
<td>Pathology Physiology Pharmacology Histology Microbiology</td>
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<td></td>
<td><strong>Intro to Systems Biology</strong></td>
<td>Neuroscience</td>
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<td></td>
<td>Pharmacology Pharmacodynamics Pharmacokinetics Autonomics Antibiotics</td>
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<td></td>
<td></td>
<td></td>
<td>Pathology Inflammation Cell Death Tissue Injury Basic Neoplasia</td>
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<td><strong>Microbiology</strong> Bacteriology Virology Mycology Parasitology</td>
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<td>Immunology</td>
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<td>Evidence Based Medicine Biostats/Epi Health Systems</td>
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<tr>
<td>Introduction to Clinical Medicine I</td>
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# Proposed Second-Year Curriculum

<table>
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<th>Proposed Second-Year Curriculum</th>
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<tbody>
<tr>
<td>Pathology</td>
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<tr>
<td>Lung</td>
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<tr>
<td>ICM II</td>
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</tbody>
</table>

August-May 37 Weeks
## Curriculum Revision Steering Committee

C. Darrell Jennings-Chair, Ro Conigliaro-Co-Chair, Robert Means, Beth Garvy, Emery Wilson, David Watt, Chipper Griffith, Matt Hensley  
Monthly

<table>
<thead>
<tr>
<th>M1 Oversight Committee</th>
<th>Admissions Policy Oversight Committee</th>
<th>Administrative Support Staff</th>
<th>IT Support/Assessment Bi-Weekly</th>
<th>ICM Sequence Oversight Committee</th>
<th>M2 Oversight Committee</th>
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<td>Bi-Weekly</td>
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<tr>
<td>Chipper Griffith - Chair</td>
<td>Carol Elam - Chair</td>
<td>Ro Conigliaro - Chair</td>
<td>Terry Stratton - Chair</td>
<td>John Wilson - Chair</td>
<td>Ro Conigliaro - Chair</td>
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<tr>
<td>Todd Cheever - Co-Chair</td>
<td>Steven Goldstein - Co-Chair</td>
<td>Sandi Jaros - Co-Chair</td>
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<td>David Rudy - Co-Chair</td>
<td>Donna Weber - Co-Chair</td>
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<table>
<thead>
<tr>
<th>Intro to Systems Committee</th>
<th>Neuro/ENT Committee</th>
<th>Heart/Lung Weekly</th>
<th>Kidney/Acid Base Weekly</th>
<th>GU/Reproductive/Endocrine Weekly</th>
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<tbody>
<tr>
<td>Weekly</td>
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<tr>
<td>Paul Murphy-Chair</td>
<td>Bruce Maley - Chair</td>
<td>Scott Morehead-Chair</td>
<td>Brian Jackson-Chair</td>
<td>Michael Kilgore-Chair</td>
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<tr>
<td>Don Cohen-Co-Chair</td>
<td>Ed Kasarskis-Co-Chair</td>
<td>Lu-Yuan Lee-Co-Chair</td>
<td>Peter Sawaya-Co-Chair</td>
<td>Irene Hong-McAtee-Co-Chair</td>
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<tr>
<td>Beth Garvy-Co-Chair</td>
<td>Kathy Saatman-Co-Chair</td>
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<table>
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<tr>
<th>Foundations of Basic Science</th>
<th>Lymph Node/Marrow/Blood Weekly</th>
<th>GI/Metabolic/Genetics/Nutrition on Weekly</th>
<th>Musculoskeletal/Bones Joints/Skin/Connective Tissue Weekly</th>
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<tbody>
<tr>
<td>Weekly</td>
<td>Weekly</td>
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<tr>
<td>Brian MacPherson-Chair</td>
<td>Melissa Kessler-Chair</td>
<td>Nicholas Nickl-Chair</td>
<td>Ray Wright-Chair</td>
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<td>Brett Spear-Co-Chair</td>
<td>Donna Weber-Co-Chair</td>
<td>Mike Fried-Co-Chair</td>
<td>Francisco Andrade-Co-Chair</td>
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<table>
<thead>
<tr>
<th>Behavioral Basis Weekly</th>
<th>Multisystem/Integrative Concepts Weekly</th>
<th>Pre-Clerkship Prep Weekly</th>
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<tr>
<td>Todd Cheever-Chair</td>
<td>Chipper Griffith-Chair</td>
<td>David Rudy - Chair</td>
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<tr>
<td>Phyllis Nash-Co-Chair</td>
<td>Ro Conigliaro-Co-Chair</td>
<td>Tony Weaver-Co-Chair</td>
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<thead>
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<td>Ro Conigliaro-Co-Chair</td>
<td>Tony Weaver-Co-Chair</td>
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<td>David Rudy - Chair</td>
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<td>Emery Wilson - Chair</td>
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<td>Matt Hensley - Chair</td>
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Cardiovascular Pulmonary Block – Vascular Section

Overview - Circulatory System - Gong

1. Structure and function of arterial vessels
   a. Elastic arteries – Ana 812 pdf (MacPherson)
   b. Muscular arteries – Ana 812 pdf (MacPherson)
   c. Arterioles – Ana 812 pdf (MacPherson)
   d. Topic #1: Blood Flow Regulation - Part #1 Hemodynamics - Gong
   e. Topic #1: Blood Flow Regulation - Part #2 Intrinsic Mechanisms - Gong
   f. Topic #1: Blood Flow Regulation - Part #3 Extrinsic Mechanisms - Gong

2. Structure and Function of veins
   a. Venules - Ana 812 pdf (MacPherson)
   b. Veins - Ana 812 pdf (MacPherson)

3. Disease and Treatment
   a. Venous stasis and thrombosis – path + clinician
   b. Therapeutics – Pharm + clinician

   The pharmacology of thromboembolic drugs-- I, II, III- 3 hrs. Donna Weber

   antiplatelet drugs-aspirin, clopidogrel, prasugrel, dipyridamole,
   abciximab anticoagulants-heparin, LMW heparins, fondaparinux,
   lepirudin, bivalirudin, dabigatran, warfarin
   thrombolitics-streptokinase, alteplase

4. Structure and Function of capillaries and lymphatics
   a. Capillaries - Ana 812 pdf (MacPherson)
   b. Lymphatics - Ana 812 pdf (MacPherson)
   c. Topic #2: Blood Tissue Exchange - Part #1 Microcirculation and Nutrient Exchange – Gong
   d. Topic #2 Blood-Tissue Exchange - Part #2 Fluid Exchange – Gong

5. Disease and Treatment
   Edema - path + clinician

   a. Smooth muscle - Ana 812 pdf (MacPherson)
   b. Endothelium - Ana 812 pdf (MacPherson)
   c. Topic #3 - Part #1 Vascular Smooth Muscle – Gong
   d. Topic #3 - Part #2 Endothelium – Gong

7. Disease and Treatment
   a. Atherosclerosis – O’Conner
   b. Therapeutics – Pharm + clinician
   c. The Pharmacology of antihyperlipidemic drugs
      I, II, III, 3 hrs Robert Hadley
      atorvastatin, rosuvastatin, simvastatin (HMG-CoA reductase inhibitors),
      colesevelam (bile acid sequestrant),
      ezetimibe (cholesterol uptake inhibitor),
      nicotinic acid,
      fenofibrate (fibrates)

   c. Vasculitis –
      1. Non – infectious - O’Connor
      2. Infectious - Micro

I. Bacteria
   o Treponema pallidum – pathology of oblitative endarteritis
   o Chlamydia pneumoniae – putative role in causing atherosclerosis
   o Rickettsia spp.: increased vascular permeability, hemorrhage (rash)

II. Viruses
   Hemorrhagic viruses: Flaviviruses, Filoviridae, Arenaviridae
   Note: that the hemorrhagic viruses may warrant special attention in the vessels section as these are not currently covered in any great detail in the virology section during M1.

III. Protozoa and Helminths
Role of the binding of Plasmodium falciparum infected erythrocytes to the endothelium and the resulting occlusion of vessels as the primary contributor to death in cerebral malaria, renal complications and in the context of pregnancy (placental).

Blood flukes (Schistosoma) interactions of adult worms and eggs with vessels and associated pathology.

IV. Fungi

Colonization of blood vessels particularly in the context of arterial stents and vascular grafts (Candida, Cryptococcus, Aspergillus etc).


Cardiovascular Pulmonary Block – Cardiac Section

1. Structure and Function of the Heart
The heart also exhibits three layers in its walls - that correspond to those of the blood vessels but are named differently.

a. The endocardium is homologous with the tunica intima of blood vessels. The subendocardial (subendothelial) layer of connective tissue contains small veins, nerves and branches of the conducting system of the heart composed of Purkinje fibers (modified cardiac muscle cells).

b. The myocardium (tunica media of vessels) is composed of cardiac muscle cells arranged in a complex spiral. Many of these fibers insert themselves into the fibrous skeleton of the heart to which the valves are also attached. The fibrous skeleton is composed primarily of dense connective tissue but some areas may contain nodules of fibrous cartilage.

c. The epicardium (tunica adventitia) is the serous layer covering the heart that comprises the visceral layer of serous pericardium. In vessels this layer has a rough, uneven outer aspect but in the heart it is covered by a smooth layer of mesothelium. The connective tissue in this layer accommodates the coronary arteries and veins as well as the nerve ganglia (sino-atrial node).

d. The valves of the heart anchor into the fibrous rings that outline the atrioventricular and fibrous cuffs that surround the semilunar orifices. These fibrous rings and cuffs in turn are components of the fibrous skeleton of the heart. Each valve has a core of dense fibrous connective tissue (containing both collagen and elastic fibers) and is lined on both sides by endothelium in the same fashion as the internal walls of the heart are (endocardium).

e. Conduction system

f. Unique Characteristics of Cardiac Muscle
g. Local Control of Blood Flow
h. Cardiac Cycle
i. Cardiac Output and Venous Return
j. Fluid Dynamics
k. Arterial Pressure and the Circulation
1. Regulation of Arterial Pressure
   m. Cardiac Function
2. Disease and Treatment
   a. Systemic Hypertension – Rudy
   b. Therapeutics – Pharm + clinician

**Pharmacology of Vasoactive Drugs.**

**Beta blockers I, II, 2 hr, Michael Piascik**
Atenolol, carvedilol, metoprolol, propranolol

**Calcium Channel blockers 1 hr. Robert Hadley**
amiodipine, diltiazem, nifedipine, verapamil

**Diuretics 1 hr, Michael Piascik**
chlorothalidone, eplerenone, furosemide,
hydrochlorothiazide, spironolactone, triamterene

**Inhibitors of the renin-angiotensin-aldosterone axis**
I, II, 2hr. Michael Piascik
lisinopril, enalapril (angiotensin converting enzyme inhibitors)
valsartan (AT1-receptor blocker)
aliskiren (direct renin inhibitor).

**Miscellaneous Vasodilators I-IV, 4 hr Hadley, Piascik**
clonidine
ranolazine
nitroprusside
sildenafil
hydralazine
minoxidil
organic nitrates
nesiritide

clonidine
**alpha adrenergic receptor blockers**

c. Pulmonary Hypertension – Morehead
d. Therapeutics – Morehead + Pharm

**Pharmacologic management of pulmonary hypertension**
Calcium channel blockers-amiodipine, nifedipine
Endothelin receptor antagonists-bosentan, ambrisentan
PDE inhibitors-Sildenafil, tadalafil
Prostacyclins-iloprost, epoprostenol

e. Hypovolemic shock and High output failure – Rudy
f. Left sided heart failure – systolic – low output

g. Right sided heart failure – systolic – low output
h. Diastolic disease and failure
i. Therapeutics – Pharm + clinician
   Per Pharm and Clinicians

**Positive inotropic agents**
Individual drugs-digoxin, dopamine, dobutamine, milrinone