7th Short Course in Integrative and Organ Systems Pharmacology
June 6 - 17, 2011
Omaha, NE
"Omaha" IOSP Short Course (a collaborative venture)

– U Nebraska Medical Center
  • Pharmacology, Physiology, Pulmonary
– Creighton U Medical School
  • Pharmacology, Biomedical Sciences
– Kansas U Medical Center
  • Pharmacology, Physiology
– Abbott Laboratories
  • Neuroscience, Drug Discovery
– The National Academies
  • ILAR
Focus Areas

• Neuro-behavioral
  – KU, Abbott
• Cardiovascular
  – UNMC, live animal models
  – Creighton, isolated tissue preparations
• Additional systems
  – Blood-brain barrier, Pulmonary, Metabolism, Delivery
  – Variable, mostly UNMC
• Animal rights, ethics, IACUCs
  – National Academies, UNMC, outside guests
• Industry research topics
  – Abbott, others
Leadership

• Course Directors (and NIH grant PIs)
  – David Bylund, 2005-2009
    • Retired 2010
  – Myron Toews, 2010-2012
    • Student Activities Director 2005-2010
    • Student in 2005 Course

• Other leaders
  – Kurt Cornish, UNMC
  – Peter Abel, Creighton
  – Sam Enna, KU
  – Bryan Cox, Abbott
  – Lida Anestidou, Natl Acad
Administrative Logistics

• Course cost
  – 2 weeks
  – $700 registration
    • includes housing and most meals
    • many get "scholarship" support
    • local students pay even less

• Housing
  – Clarkson Nursing School dorms
  – two blocks from campus

• Applications, registration, money handling
  – UNMC Continuing Ed
Teaching Logistics

• 12 students each year
  – two groups of 6 for many labs
• Lectures mornings, labs afternoons
  – some days labs morning and afternoon
  – often group lunches with industry faculty
• ~ 75% UNMC labs, 25% CU labs
  – Shuttle bus between campuses
Lecture Logistics

- Course syllabus and binders
- Promotional backpacks
- All materials also on BlackBoard
- Lectures recorded
  - audio-over-PowerPoint, Echo360
  - posted on BlackBoard

- All course materials available for dissemination
  - very nice video on dog surgery
Models and Assays

• General animal training (~2 days)
  – rodent handling and injection
  – anesthesia, blood-draw, euthanasia
  – dissection, suturing, surgery/autopsy

• Neuro-behavioral (~2½ days)
  – working memory (Y maze)
  – locomotor activity (open-field, rotarod, catalepsy, strain differences)
  – anti-depressants (forced swim test)
  – analgesia (von Frey hairs, thermal paw lift, tail flick)
Models and Assays

• Cardiovascular (~2½ days)
  – Isolated tissues
    ✓ vascular contraction (rat aorta)
    ✓ Langendorff heart (rat)
  – Live animal
    ✓ echo-cardiography (rat, rabbit)
    ✓ rat cardiovascular surgery/instrumentation
    ✓ dog cardiovascular surgery/instrumentation
    ✓ drug effects on conscious chronically instrumented dog
Models and Assays

• Pulmonary (~½ day)
  – broncho-alveolar lavage fluid collection
  – whole body plethysmography (Buxco)
  – invasive thoracotomy assays (Fine Pointe)

• Other labs (mixed in, variable, ~½ day)
  – rat BBB (catheterization, Evans blue)
  – bone density (DEXA-scan)
  – metabolism (calorimetry, diabetic mice)
  – parabiosis (GFP mice)
Electives

- Focused research experiences
- Students' personal interests
- Choice of 6 Omaha faculty labs
- All day last 2 days

Post-course Internships

- "Anywhere", not just Omaha IOSP labs
- Help as much as possible
- A few have done this
Evaluations

- **With Suvery Monkey**
  - anonymous, short, simple
  - professional analysis of results
  - extremely helpful in improving course!!

- **Pre-course survey**
  - knowledge, expectations

- **Daily surveys**
  - each lecture and lab

- **Post-course surveys**
  - how did we do, how can we improve

- **Follow-up surveys and tracking**
  - every subsequent year
Social Activities

• First-night dinner and social
  – faculty home, students and available faculty
  – helps build group interactions

• Baseball game
  – Omaha Royals
  – now Storm Chasers
  – AAA team for KC Royals

• Group bike ride
  – around one of local lakes
Social Activities

• Saturday: Henry Doorly Zoo
  – world-class zoo with strong research program
  – talk and tour of animal research facilities by zoo's research director
  – behind the scenes access
  – time to enjoy the zoo after

• Farewell Banquet
  – final night
  – restaurant in Old Market district
  – talk by Abbott research leader
  – food and fun and farewells
Two Frustrations

1. Difficulty in recruiting students
   • not the demand for these courses we had hoped for
   • students not sure it's worth it--time and cost
   • mentors want them in lab working on grants
   • students want another paper more than more skills
Posters and brochures to all Pharmacology chairs and DOGSs
Promotion at Experimental Biology sessions
Why is IOSP important?

“IT’S LIKE STEROIDS FOR YOUR CAREER.”
Two Frustrations

1. Difficulty in recruiting students
   • but we get it done each
   • typical year
     ✓ 5-6 "outside" students
     ✓ 2-3 "regional" students
     ✓ 2-3 "local" students

✓ 1 international student (Finland, Canada, Germany)
✓ 1 faculty member
✓ 1 minority student
✓ about half grad students, half postdocs
✓ half US students, half foreign students
✓ half male, half female
Two Frustrations

2. Institutional frustrations

• Administration
  ✓ low indirect cost rate
  ✓ "more trouble than it's worth" for administration
  ✓ limited if any reward for major effort

• IACUC
  ✓ quite limited on what they allow for teaching
  ✓ limited pain/analgesia labs
  ✓ shut down one of our dog labs this year, mid-grant
  ✓ full UNMC procedures for two-week course
  ✓ even for 2-day elective labs

• We would change course if it continued
  ✓ but we all believe in it strongly
Summary Thoughts

• Do we have an excellent course in Omaha? YES
• Are there 3 other excellent courses also? YES
• Would we love to have your students next year? YES
• Should all students take a course like this? YES
• Is this the best way to teach this material? NO
• EVERY DEPARTMENT should teach this
• To EVERY STUDENT in Pharmacology