

# **Implications of Medical School Curricular Changes for Science and Research Education**

**Kevin Shannon**  
**UCSF**

# Overview

- **Structural changes in the UCFSF medical school curriculum that were implemented in 2001**
- **Impact of these curricular changes**
- **Pathways to Discovery initiative**
- **Implications for training physician/scientists now and in the future**

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# **Rationale for Curricular Changes**

- **Lack of continuity of content taught in years 1 and 2 across different basic sciences modules**
- **Abrupt “disconnect” between didactic content in years 1 and 2 and patient-based learning in years 3 and 4**

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*Counterpoint: How I learned Latin at a Jesuit High School*

# Designing and Implementing Curricular Changes

- Informed by educational principles drawn from the fields of *“cognitive psychology, workplace learning, inquiry and improvement, and professional formation”*
- The development of an academic educator career pathway for faculty, embodied by the formation of an Academy of Medical Educators, and been integral to implementing curricular changes at UCSF

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*The primary responsibility for medical education has passed from other groups to medical educators*

# Overview of UCSF Curriculum

- **Longitudinal courses that attempt to integrate learning about specific organ systems and diseases (e.g. BMB, Infection, Immunity, and Inflammation) have replaced traditional courses (e.g. Anatomy, Pathology)**
- **Number of formal teaching hours reduced from 28 to 24 hours per week in years 1 and 2**
- **Ratio of didactic lectures to small groups changed from ~2.5:1 to 1:1, resulting in a large decrease in basic sciences instruction**
- **Intersessions blocks added to years 3 and 4**

# Overview of UCSF Curriculum

QuickTime™ and a  
TIFF (LZW) decompressor  
are needed to see this picture.

# Intercessions

- **A required 3 week course during the clinical clerkship year taught in one-week segments**
- **The goals are: “(1) to acquire knowledge and skills in topic areas that are relevant to clinical medicine, but are rarely specifically taught in the clinical setting; and (2) to provide an opportunity to reflect on your experiences to date and discuss them with your classmates”**
- **The concepts covered include: (1) Clinical Decision Making (CDM), Advances in Medical Sciences (AIMS), Health Systems, Ethics, Professional Development (Reflections)**

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# Measurable Outcomes

- **Mean USMLE Step 1 exam scores (223 - 229) and passing rates (93 - 99%) have not changed**
- **Mean USMLE Step 2 exam scores (219 - 225) and passing rates (95 - 98%) have also not changed**
- **No obvious impact on the ability of UCSF students to obtain desirable residency training positions**

## **Other Consequences (Anecdotal Data)**

- **The large increase in small group sessions has increased the need for faculty instructors**
- **SOM curriculum is now driven by academic educators who are very cognizant of student opinions**
- **There is an increasing emphasis on teaching to and measuring “competencies” that is reminiscent of pharmacist, nurse practitioner, and PA training**
- **Some students find that small groups focus inadequately on the molecular mechanisms of disease**

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*Physician-scientists have largely “checked out” of teaching*

# **A Personal Vignette**

- **Hematology was one of the most popular small group learning experiences during the 2nd year Introduction to Clinical Medicine (ICM) course in the old curriculum**
- **Case-based small group discussions (2 hours x 6)**
- **I taught this course for ~10 years under the old curriculum, and for 1 year in the new curriculum**
- **The cases and structure were the same, but the approach of the students was different**

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*While this cannot be attributed to the new curriculum, which has only been running a few years, it was an impetus for review*

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**The Answer:** Admit highly motivated students, stress fundamental mechanisms of disease, and set a high academic bar

**The Big Question:** *Should these precepts be applied to the entire class? **Probably Not***

# **Proposal for Molecular Medicine Pathway (MMP)**

- **Applicants self-identify interest in this pathway and cannot apply concurrently to MSTP**
- **SOM to admit ~15 students per class**
- **MMP students take standard SOM curriculum and complete “core” graduate courses during years 1 and 2**
- **Summer lab rotations before entry and after 1st year**
- **One year intensive lab research project after 3rd year**
- **Other educational activities**

# **Status of the UCSF MSTP**

- **MSTP students are committed to clinical medicine and almost all are generally satisfied with the SOM**
- **MSTP students do not want to be assigned to specific small groups that emphasize molecular medicine**
- **MSTP students very supportive of MMP pathway and would like to have more peers who are interested in lab research and discovery**
- **Academic educators increasingly supportive of MSTP students**

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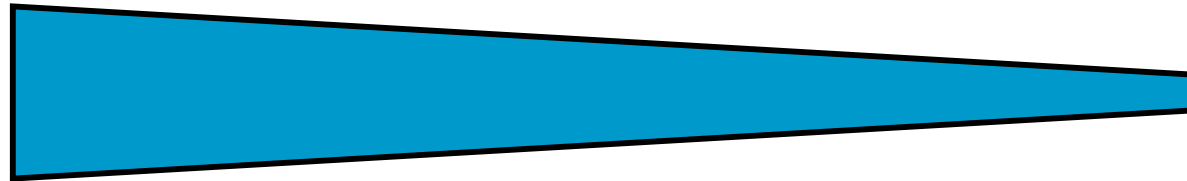
*Will the MMP undermine the MSTP?*

# Overview

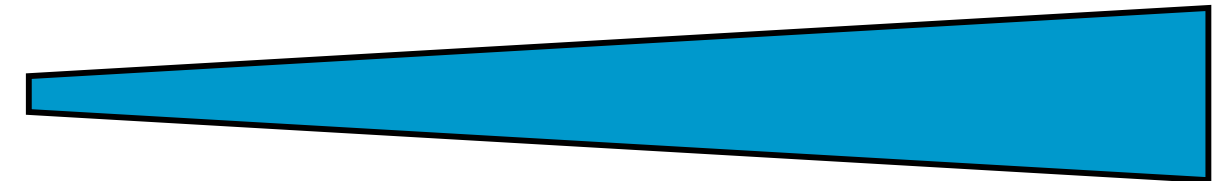
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# Looking To the Future.....

**Didactic  
Instruction**



**Clinical  
Experience**



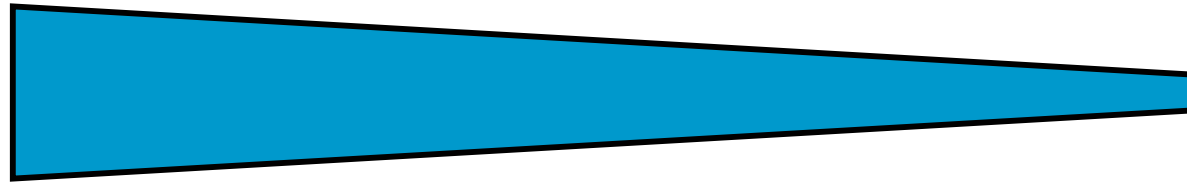
**Year 1**

**Year 2**

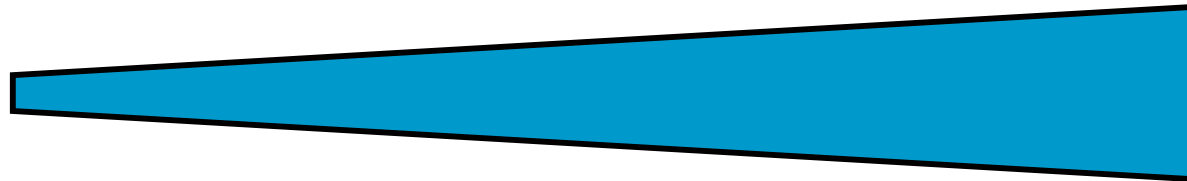
**Year 3**

# Looking To the Future.....

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**Clinical  
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**Year 1**

**Year 2**

**Year 3**

**“Hybrid”  
USMLE  
Exam**

# **Implications for MSTP Training**

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**If the plan is that most MSTP students enter graduate school at the end of 3rd year, will this increase the rate of attrition from MSTP?**

# Potential Solutions

**Design a different medical school pathway for MSTP and other students who are interested in a laboratory research career path (HST, MMP, Einstein, etc.)**

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Design a different medical school pathway for MSTP and other students who are interested in a laboratory research career path (HST, MMP, Einstein, etc.)

**Admit students to MSTP during the 2nd year of medical school and pay for medical school retroactively (or impose stringent payback requirements for students who bail out)**

# **Acknowledgments**

**Jana Toutolmin**

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**MSTP Council**

**MSTP Students**