



# Mentored Scholarly Activity

Scholarship for Life-Long Learning

University of Colorado School of Medicine

UNIVERSITY OF COLORADO DENVER



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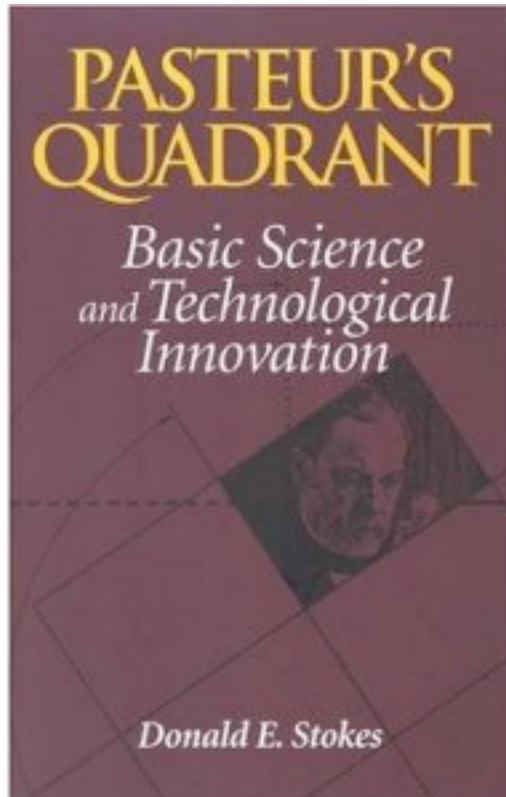
<http://medschool.ucdenver.edu/biochemistry>





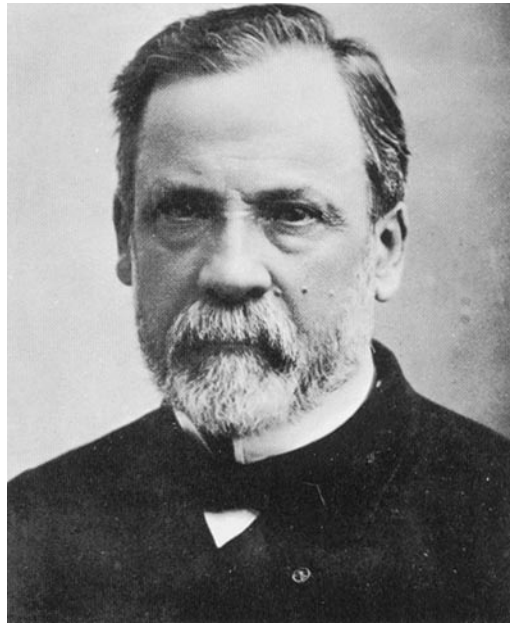
# Scholarship in Basic Science and Medicine

- Uses Scientific Method of Hypothesis Testing
- Uses Model systems to Study Human Biology
- Translational Research



Three distinct classes of research:

1. Pure basic research (exemplified by the work of Niels Bohr, atomic physicist).
2. Pure applied research (exemplified by the work of Thomas Edison, inventor).
3. Use-inspired basic research (exemplified by the work of Dr. Louis Pasteur, Microbiologist and Immunologist).



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# Dr. Louis Pasteur (1822-1895)

- Showed Microorganisms cause disease (and make wine and beer, too!)
- Developed Vaccines
- From Bench (Isolate Microorganisms and Develop Vaccines) to Bedside (Cure and Prevent Infectious Disease)



# Dr. Frederick Banting (1891-1941) and Charles Best (1899-1978)

- Used Dog Model to identify the cause of Diabetes and to Discover Insulin
- Used Insulin as a treatment for Diabetes
- Nobel Prize in 1923
- From Bench (Isolated Insulin from Dog Pancreas) to Bedside (Treated Diabetic Children)





# My Story

- Always been interested in Cancer Biology (Family and Friends died from it) and because it is a Molecular and Cellular Disease
- “Stand on the Shoulders of Giants”
- How to design a model system to study it
- Ph.D. Columbia University
- Postdoctoral Study at University of Washington
- University of Colorado since 1985





# Why study the mechanism?

1. Tells us how to design better drugs
2. Tells us about possible side effects
3. Tells us about other cancers and even other diseases
4. Tell us which patients may benefit the most
5. Bench (Mechanism) to Bedside ( New Drugs for Chemotherapy)



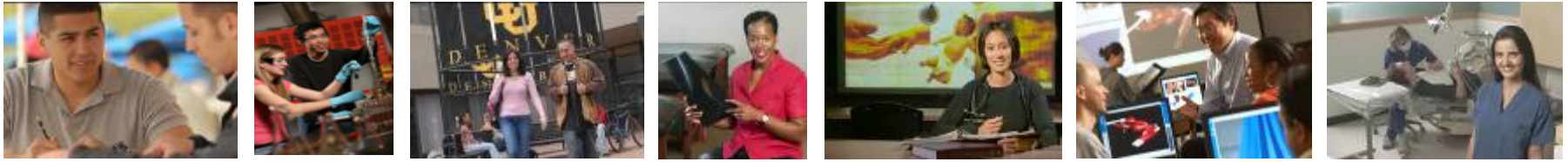
## Take Home Lessons

- Pure Basic Science is important even if there is no clear application
- Use-Inspired Translational research can go in either direction (“bench to bedside” and/or “bedside to bench”)
- Pure Applied research produces important inventions (e.g. medical instrumentation)



# MSA Projects

- The role of mRNA/Protein complexes (mRNPs) in controlling *C. elegans* development (Dr. T. Evans-CDB).
- Novel method for quantitative ANA measurement using near-infrared imaging (Dr. Dragone-Pediatrics)
- Increased Cytokine Production in Interleukin-18 Receptor-deficient Cells Is Associated with Dysregulation of Suppressors of Cytokine Signaling (Dr. Dinarello-Infectious Diseases)
- Expression and Functionality of Bradykinin Receptor 1 and Receptor 2 in SCLC, NSCLC, Breast, and Prostate Cancer Cell lines (Dr. Bunn-Medical Oncology)
- Develop Cancer Vaccine for Drug-Resistance BCR-ABL<sup>T315I</sup> Tumors (Dr. DeGregori-BMG)
- Retinoid and thiazolidinedione therapies in melanoma: an analysis of differential response based on nuclear hormone receptor expression (Dr. Haugen-Endocrinology)



# How to Get Started

- Library/Internet Resources
- Instructors in M2M Lectures
- MSII, MSIII and MSIV Students
- MSTP (M.D./Ph.D.) students
- Graduate School Home Page (includes MSTP)
- <http://www.ucdenver.edu/academics/colleges/Graduate-School>
- Meet with Associate Director(s)
- Tracks (Research Track, CU Cancer Center, Etc.)