

# Patrick S. Hume

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## EDUCATION

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<b>University of Colorado</b> <i>M.D./Ph.D. Student (Medical Scientist Training Program)</i> Aschutz Medical Campus, Denver CO MSI and MSII Department of Chemical and Biological Engineering, Boulder CO Graduate Thesis GPA: 3.8/4.0	Aug 2005 - Present
<b>University of Colorado</b> <i>Bachelor of Science, with High Distinction</i> Department of Chemical Engineering, Boulder CO Major: <i>Chemical Engineering</i> Option: Biomedical Engineering Minor: Biochemistry GPA: 3.9/4.0	Aug 2001 – May 2005
<b>Columbine High School</b> , Littleton CO <i>Valedictorian</i>	Aug 1997 – May 2001

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## HONORS & AWARDS

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- **ACS Most Promising Researcher**, Dept. of Chemical Engineering, University of Colorado, Boulder; 2005
- **Norlin Scholar**, University of Colorado; 2001-2005
- **Engineering Merit Scholarships**, University of Colorado; 2001-2005
- **Engineering Dean's List**; 2001-2005
- **Tau Beta Pi**; 2004

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## PUBLICATIONS

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- Leiske DL, Karimpour-Fard A, **Hume PS**, Fairbanks BD, Gill RT. A comparison of alternative 60-mer probe designs in an in-situ synthesized oligonucleotide microarray. *BMC Genomics*. 2006 Apr 4; 7:72
- Bonomo J, Wernecke T, **Hume P**, Marizcurrena A, Gill RT. A comparative study of metabolic engineering anti-metabolite tolerance in *Escherichia coli*. *Metab Eng*. 2006 May; 8(3):227-39

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## RESEARCH EXPERIENCE

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<b>Ph.D. Thesis</b> , University of Colorado, Boulder Department of Chemical and Biological Engineering Advisor: Kristi Anseth, Ph.D. Project: <i>Generating local immunosuppression by incorporating anti-fas antibody into a polymer brush</i> <ul style="list-style-type: none"><li>• Utilizing living radial polymerization (LRP) and photolithography to graft polymer chains containing PEGacrylate and anti-fas ligand from polymeric surfaces</li><li>• Studying the effects of encapsulating pancreatic islets in a modified hydrogel</li><li>• Use fluorescent microscopy, ELISA, UV-Vis spectroscopy and various molecular biology techniques for characterization</li><li>• Utilize organic chemistry synthesis to develop novel biomolecules</li></ul>	Jul 2007 - Present
<b>MSTP Research Rotation</b> , National Jewish Hospital, Denver, CO Advisor: John Cambier	Summer 2007

- Project: *Characterization of young and aged HSC differentiation along the B cell lineage*
- Used flow cytometry and various cell culture techniques to study B cell differentiation
  - Familiarized myself with immunology research & techniques
- MSTP Research Rotation**, University of Colorado, Boulder CO Summer 2006  
 Advisor: Kristi Anseth Ph.D.  
 Project: *Immunoisolation of Pancreatic Islets with anti-Fas Ligand in a dual-layered PEG hydrogel*
- Encapsulated pancreatic islets in a modified hydrogel and studied the effects of T cell exposure over a period of one month using fluorescent microscopy and molecular biology assays
- Senior Thesis Project**, University of Colorado, Boulder CO 2004 – 2005  
 Advisor: Ryan T. Gill, Ph.D.  
 Project: *Using random mutagenesis to improve the hydroxamate tolerance of E. coli.*
- Familiarized myself with techniques used for random mutagenesis, bacterial MICs and MBCs, and *E. Coli* cell culture
- NSF-REU**, University of Colorado, Boulder CO Summer 2004  
 Advisor: Ryan T. Gill, Ph.D.  
 Project: *Transcriptional profiling of the effects of heat shock of Burkholderia cenocepacia*
- Used DNA microarrays to characterize and quantify the effects of heat shock on *Burkholderia cenocepacia*.
- Research Assistant**, University of Colorado, Boulder CO 2003 – 2004  
 Advisor: Ryan T. Gill, Ph.D.  
 Project: *Validating a Novel Microarray for Burkholderia cenocepacia*
- Validated a novel bacterial microarray from Agilent Technologies using various cell-based assays
- Research Assistant**, URAP - University of Colorado Summer 2003  
 Advisor: Ryan T. Gill, Ph.D.  
 Project: *Developing a method for total RNA isolation and purification of Burkholderia cenocepacia*
- Familiarized myself with bacterial cell culture, sterile technique, and RNA isolation strategies.

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## ACTIVITIES AND EXPERIENCES

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- 2008 National MD/PhD Student Conference Organizing committee** 2007-2008
- Worked with four students to organize a national conference for over 250 attendees from around the country
  - Served as webmaster, handled all conference registration, and acted as liaison to Keystone resort whereby I manage all scheduling and room-booking.
- Laboratory Safety Proctor**, Anseth Lab Fall 2007 - Present
- Perform routine safety checks and maintain the laboratory chemical inventory
- CHEN 1300 Presentation** Spring 2008
- Prepared and presented a lecture to the freshman chemical and biological engineering class regarding how to apply (and get in) to medical school and MD/PhD programs
- Digestive, Endocrine, and Metabolism (DEMS) Block Representative** Fall 2006
- Served as a liaison between students and faculty during the DEMS medical school unit
- Club Swim Team**, University of Colorado 2001 - 2005  
 Team Captain; 2002-2003  
 Vice President – Travel; 2004-2005
- Managed a >\$20,000 travel budget and organized all team travel

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## HOBBIES

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Skiing, Biking, Hiking, Backpacking, Guitar, Softball, Intramural Sports, Indie rock music