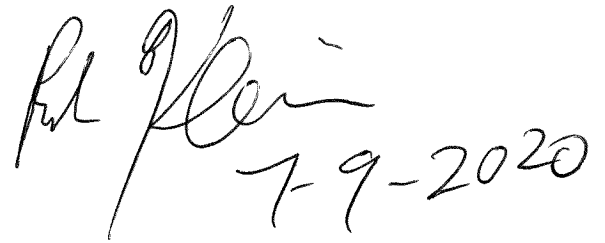


# Curriculum Vitae

[revised July 9, 2020]



## Personal Data

**Name:** Robert R Klein III  
**Telephone:** (520) 437-4759  
**E-Mail:** rrk@email.arizona.edu

## Undergraduate Education

- **Brigham Young University**, BS, Zoology, Aug 1993. Minors: Mathematics, Chemistry, and Philosophy (Logic).
  - Honors:
    - Magna Cum Laude. Graduated #1 in the Zoology department. Invited to speak at graduation ceremony.
    - Putnam Exam (national mathematics competition) -- Ranked #8 in the Western Athletic Conference. The exam is invitational and the most prestigious contest in mathematics for undergraduates.
  - Activities:
    - Honors Student Council, Science Committee and Selection Committee (selected new leaders to council).
    - Staff member of The Leading Edge Magazine. Screened manuscripts submitted for publication, proofread.

## Medical Education

- **University of Utah School of Medicine**, MD, May 1997.
  - Licensing Exams: USMLE Steps I through III -- Passed.
  - Honors: Honors for performance in 16 courses.
  - Activities:
    - Member of Educational Computing Committee, 1993-1997. Reviewed proposals and approved funding for educational software and hardware development.

## Postgraduate Work

- **University of Arizona Department of Pathology**
  - Pathology resident, July 1997 to June 2002
  - Research Instructor, July 2002 to September 2005.
  - Assistant Professor, October 2005 to June 2015.

- Associate Professor, July 2015 to present
- **Banner University Medical Center**, Oct 2005 to present
  - Medical Director, Payson Regional Medical Center, November 2006 to June 2010.
  - Medical Director, Kindred Hospital, January 2007 to June 2010.
  - Medical Director, Cobre Valley Community Hospital, October 2007 to February 2009.
  - Medical Director, University of Arizona Medical Center South Campus Hospital, March 2013 to present.
- **Honors:**
  - College of American Pathology Foundation Informatics Awardee, five times (1997,1999-2002).
  - National Cancer Institute Cancer Biology Fellowship awardee (2002).
  - Diplomate in combined Anatomic Pathology and Clinical Pathology, American Board of Pathology (2003).
  - C. George Ray, MD, Outstanding Post-Sophomore Fellowship Teaching Award (2014).
  - John R Davis, MD, Outstanding Resident Teaching Award (2016).
  - Pathology Residents' Appreciation Award (2018).

## Service/Outreach Activities

- **Local/State**
  - 1997-2005 Tucson Society of Pathology member
  - 1997-present Arizona Society of Pathology member
- **National/International**
  - 1997-present American Society of Clinical Pathology member
  - 1997-present United States and Canadian Academy of Pathology member
  - 1997-2004 College of American Pathology junior member
  - 1998-2002 College of American Pathology Residents' Forum Arizona delegate or alternate
  - 2003-2005 Member, Tissue Banks and Pathology Working Group, Cancer Bioinformatics Grid, National Cancer Institute
  - 2003-2012 Member, Association of Pathology Informatics
  - 2004-present Fellow of the College of American Pathology
  - 2005-2012 Member, Editorial Review Board, Laboratory Medicine
  - 2012-present Medical Editorial Board, DoveMed.com
  - 2015-present Editorial Review Board, International Clinical Pathology Journal

- **University, College, Department and Other Committees**
  - 1999-2000 Physician Steering Committee member, physician order entry project, University Medical Center
  - 2000-2000 Associate Director of Informatics, Pathology Department, University of Arizona
  - 2000-present Director of Informatics, Pathology Department, University of Arizona
  - 2002-2005 Alternate Delegate, Arizona Cancer Center Cabinet, University of Arizona
  - 2008-2010 Member, Continuing Medical Education Committee, University of Arizona.
  - 2009-present Member, Endocrine Tumor Board, Banner University Medical Center.
  - 2010-2016 Member, ICD-10 Communication, Training and Education Team.
  - 2015-present Member, Gynecologic Oncology Tumor Board, Banner University Medical Center.

## Peer-Reviewed Publications

1. **Klein RR**, Rodgers GM. Factor XIII Deficiency: The Laboratory Evaluation of Bleeding Disorders Associated with Normal Screening Coagulation Tests. *ASCP Check Sample, Clinical Hematology* 3: 131-141, 1997.
2. McKinlay R, Neeleman S, **Klein R**, Stevens K, Greenfield J, Ghory M, Cosentino C. Intra-Abdominal Abscess Following Open and Laparoscopic Appendectomy in the Pediatric Population. *Surgical Endoscopy*, published online 7 March 2003.
3. **Klein R**, Mount D, Nagle R. Modern Data Security. *Archives of Pathology and Laboratory Medicine*, 128(3), March 2004.
4. **Klein R**, Mount D, Nagle R. In Reply. *Archives of Pathology and Laboratory Medicine*: Vol. 128(10), October 2004.
5. Buschhorn H, **Klein R**, Chambers S, *et al.* Aurora-A Over-Expression in High-Grade PIN Lesions and Prostate Cancer. *The Prostate*, 64(4), September 2005; published online 7 March 2005.
6. **Klein R**. Information Security: Managing the Health of Your Laboratory Information Network. *Laboratory Medicine*, vol. 36(10), October 2005.
7. Kremer C, **Klein R**, Mendelson J, *et al.* Expression of mTOR Signaling Pathway Markers in Prostate Cancer Progression. *The Prostate*, 66(11), 1 August 2006; published online 1 May 2006.
8. Limesand K, Avila J, Victory K, Chang H, Shin Y, Grundmann O, **Klein R**. Insulin-Like Growth Factor-1 Preserves Salivary Gland Function After Fractionated Radiation. *International Journal of Radiation Oncology, Biology, Physics*: 78(2), October 2010; published online 16 July 2010.
9. Victory K, Burd R, Fribley A, Sittadjody S, Arnett D, **Klein RR**, Limesand KH. Head and neck tumor cell radiation response occurs in the presence of IGF1. *Journal of Dental Research*: 90(3), March 2011; published online 12 November 2010.

10. Fuchs D, McGinn S, Cantu C, **Klein R**, Sola-Visner M, Rimsza L. Developmental Differences in Megakaryocyte Size in Infants and Children. *American Journal of Clinical Pathology*, July 2012.
11. Martin K, Hill G, **Klein R**, Arnett D, Burd R, Limesand K. Prevention of Radiation-Induced Salivary Gland Dysfunction Utilizing a CDK Inhibitor in a Mouse Model. *PLoS ONE*: 7(12), December 2012.
12. Cox K, **Klein R**. Craniofacial and shoulder asymmetry and its relationship to temporomandibular disorder: A study of 183 patients. *Ear, Nose & Throat Journal*: 92(3), March 2013.
13. Morgan-Bathke M, Lin H, Chibly A, Zhang W, Sun X, Borok Z, Flodby U, Wu R, Arnett D, **Klein R**, Ann D, Limesand K. Deletion of Atg5 Shows a Role of Autophagy in Salivary Homeostatic Control. *Journal of Dental Research*: 92(10), October 2013; published online 24 July 2013.
14. Morgan-Bathke M, Hill G, Harris Z, Lin H, Chibly A, **Klein R**, Burd R, Ann D, and Limesand K. Autophagy Correlates with Maintenance of Salivary Gland Function Following Radiation. *Scientific Reports*: 4(5206), June 2014.
15. Morgan-Bathke M, **Klein R**, Limesand K, *et al*. The Rapalogue, CCI-779, Restores Salivary Gland Function Following Radiation. *PLoS ONE* 9(12), December 2014.
16. Wang Y, Mang M, Wang Y, Wang L, **Klein R**, Kong B, Zheng W. Tubal Origin of Ovarian Endometriosis and Clear Cell and Endometrioid Carcinoma. *American Journal of Cancer Research*: 5(3), February 2015.
17. Aly F, Chen H, Arnold S, **Klein R**, Chambers S, Zheng W. Fallopian Tube Cytology in Patients Undergoing Salpingo-Oophorectomy. *American Journal of Clinical Pathology*: 144(suppl 2), October 2015.
18. Aly F, Millius R, Sobonya R, Aboul-Nasr K, **Klein R**. Cytologic diagnosis of coccidioidomycosis: Spectrum of findings in Southern Arizona patients over a 10 year period. *Diagnostic Cytopathology*: 44(3), March 2016; published online 22 January 2016.
19. Bracamonte E, Gibson B, **Klein R**, Krupinski E, Weinstein R. Communicating Uncertainty in Surgical Pathology Reports: A Survey of Staff Physicians and Residents at an Academic Medical Center. *Academic Pathology*. July 2016.
20. MacKerricher W, **Klein R**, Winston D. Association of Antemortem Central Nervous System (CNS) Symptoms and Location of Aortic Dissections; A Retrospective Study from 2001-2014. *Academic Forensic Pathology*. September 2016.
21. Chen H, **Klein R**, Arnold S, Chambers S, Zheng W. Cytologic studies of the fallopian tube in patients undergoing salpingo-oophorectomy. *Cancer cell international*: 16(78). 2016.
22. Jones KM, Randtke EA, Yoshimaru ES, Howison CM, Chalasani P, **Klein RR**, Chambers SK, Kuo PH, Pagel MD. Clinical Translation of Tumor Acidosis Measurements with AcidoCEST MRI. *Molecular imaging and biology : MIB : the official publication of the Academy of Molecular Imaging*. 2016.
23. Chen H, **Klein R**, Arnold S, Wang Y, Chambers S, Zheng W. Tubal Cytology of the Fallopian Tube as a Promising Tool for Ovarian Cancer Early Detection. *J. Vis.*

- Exp. (125), e55887, doi:10.3791/55887. July 25, 2017.
24. Vanderbilt DB, Ho QA, Goyal U, Bell RC, **Klein RR**, Yi SK. HPV-related nasopharyngeal and cervical cancer in a married couple in North America. *Pract Radiat Oncol*. October 11, 2017.
  25. Eshghi A, **Klein R**, Eshghi N, Kuo PH. F-FDG PET/CT for the Evaluation of Primary Eosinophilic Granuloma of the Hypothalamus. *Journal of nuclear medicine technology. J Nucl Med Technol.*: 46(3), Sept 2018; published online 3 May 2018.
  26. Gilman K, Camden J, **Klein R**, Zhang Q, Weisman G, Limesand K. P2X7 receptor deletion suppresses  $\gamma$ -radiation-induced hyposalivation. *Am J Physiol Regul Integr Comp Physiol.*: 316(5), May 2019; published online 20 March 2019.
  27. Becker J, Patel V, Johnson K, Guerrero M, **Klein R**, Ranvier G, Owen R, Pawha P, Nael K. 4D Dynamic Contrast-enhanced MRI for Pre-operative Localization in Patients with Primary Hyperparathyroidism. *Am J Neuroradiol*: 41(3), March 2020; publish online 12 March 2020.

### **Works in Progress**

1. Aly F, Mostofizideh S, Knapik J, **Klein R**, Faisal M, Leon M, Drew P, and Jawaid S. Effect of Single Operator Cholangioscopy on Accuracy of Bile Duct Cytology. Accepted for publication in *Diagnostic Cytopathology* on 28 June, 2020.

### **Media (software)**

1. December 2003. Released version 1.0 of a web-based Oracle database application for storing and presenting data from cancer studies on genetically modified rodents. This is a multi-tiered J2EE web application running on an Oracle Application Server 9i and backed by an Oracle 9i database. Several revisions have followed.
2. May 2004. Released version 1.0 of a secure web-based Oracle database application for storing and presenting data on gastrointestinal cancer tissue. This is a J2EE enterprise application with authentication and authorization services running on an Oracle Application Server 10g, backed by an Oracle 9i database. Several upgrades have followed, with the addition of new features.
3. May 2004. Released version 1.0 of a secure web-based Oracle database application for storing and presenting data on lymphoma and leukemia tissue. This is also a J2EE enterprise application with authentication and authorization services running on an Oracle Application Server 10g, backed by an Oracle 9i database.
4. November 2004. Released version 2.0 of a secure web-based Oracle database application for storing and presenting data on prostate cancer tissue and prostate specific antigen (PSA) results. This was an upgrade project to move data from a legacy database system to a more functional platform, in addition to adding several totally new features and datasets. As with our other extant tissue databases, this a J2EE enterprise application with authentication and authorization

services running on an Oracle Application Server 10g, backed by an Oracle 9i database.

## Scholarly Presentations

1. **Klein R**, Tangella K, Schiffman R. A New Mathematical Criterion for Interpreting Plasma Mixing Studies. Abstract presented at the United States and Canadian Academy of Pathology, Chicago, IL, February 2002. Selected as a Stowell-Orbison award candidate, an award for the most outstanding resident abstract.
2. Tangella K, **Klein R**, Stephen G, Sobonya RE, Schiffman R. *Coccidioides immitis* in bronchoalveolar lavages: Comparison of cytologic and microbiologic techniques. Invited presentation at the 46th Coccidioidomycosis Study Group meeting in Davis, California, April 2002.
3. **Klein R**. Novel Bayesian Network Probability Propagation Techniques. Invited presentation at the Computation Biology Seminar in Tucson, Arizona, Spring 2002.
4. Bhattacharyya A, **Klein R**, Richter L, Webster P, Scott K, Fleishman J, Kripinski E, Weinstein R. Feasibility Study of the Diagnostic Accuracy of Robotic Telepathology For Quality Control And Quality Assurance Programs. Abstract presented at the United States and Canadian Academy of Pathology, Washington, DC, March 2003.
5. **Klein R**. Identification and Deidentification. Invited presentation at the GI SPORE semiannual meeting in Tucson, Arizona, March 2003.
6. Bielski M, **Klein R**, *et. al.* Prospective Component Utilization Review: A Follow-Up Study of The Impact Of Not Transfusing. Abstract presented at American Association of Blood Banks Annual Meeting, October 2003.
7. **Klein R**. Diagnostics. Invited presentation at Cancer Biology Seminar, Arizona Cancer Center, January 2004.
8. Buschhorn H, **Klein R**, Chambers S, Hardy M, Prasad A, Nagle R. Analysis of Aurora 2 Kinase in Prostate PIN Lesions. Abstract presented at AACR 95th Annual Meeting in Orlando, Florida from March 27-31, 2004.
9. Bracamonte E, **Klein R**, Drachenberg C. Reproducibility of Proposed Banff Schema for Grading of Pancreas Allograft Rejection. Presented at the 2009 Banff Conference on Allograft pathology in Banff, Alberta, Canada, August 2009.
10. Cox K, **Klein R**. Asymmetry and the Diagnosis of TMD. Presented at the TMJ Bioengineering Conference in Broomfield, Colorado, November 6, 2009.
11. Fuchs D, McGinn S, Cantu C, **Klein R**, Sola-Visner M, Rimsza L. Developmental Differences in Megakaryocyte Size in Infants and Children. Presented at the 2011 USCAP Annual Meeting in San Antonio, Texas, February 26 to March 4.
12. Summers D, Smith J, **Klein R**, Weinstein R, Bracamonte E. Post-Sophomore Fellowships in Pathology: A National Survey. Abstract presented at 2012 USCAP Annual Meeting in Vancouver, British Columbia, Canada, March 17-23.
13. MacKerricher W, Wang Y, **Klein R**, Cragun J, Hatch K, Chambers S, and Zheng W. Association of Microscopic Findings of Ovarian High-Grade Serous

- Carcinoma (HGSC) and Status of BRCA Mutation. Abstract presented at 2015 USCAP Annual Meeting in Boston, Massachusetts, March 21-27.
14. Chen H, Arnold S, **Klein R**, Aly F, Chambers S, Zheng W. Fallopian Tube cytology in patients undergoing salpingo-oophorectomy. ASCP 2015 Annual Meeting, in Long Beach, CA, October 28-30, 2015.
  15. Chen H, Arnold S, **Klein R**, Aly F, Chambers S, Zheng W. Cytological Recognition of Serous Tubal Intraepithelial Carcinoma from Tubal Cytology and Pelvic Washing Samples. United States & Canadian Academy of Pathology's 105th Annual Meeting in Seattle, Washington, March 12-18, 2016.
  16. Arnold S, Chen H, **Klein R**, Aly F. Utility of GATA3 in Urothelial Cytology. United States & Canadian Academy of Pathology's 105th Annual Meeting in Seattle, Washington, March 12-18, 2016.
  17. Gibson B, **Klein R**, Bracamonte E, Weinstein R. Communication in a Pathology Report: Differences between Pathology Attendings, Residents and Clinicians. United States & Canadian Academy of Pathology's 105th Annual Meeting in Seattle, Washington, March 12-18, 2016.
  18. Aly F, Mostofizideh S, Knapik J, **Klein R**, Faisal M, Leon M, Drew P, and Jawaid S. Comparative Accuracy of Cholangioscopy and Cholangiogram in Bile Duct Cytology: A Retrospective Institutional Study. United States & Canadian Academy of Pathology's 109th Annual Meeting in Los Angeles, California, February 28 - March 5, 2020.

## Other Works

1. 1992. PCR research at Brigham Young University to find genetic markers in sugar cane for use in further research.
2. 1993. PCR research at Brigham Young University on trout mitochondrial DNA to develop a phylogenetic tree of trout species in the Great Basin region and to relate the phylogenetic separation between species to known geographic separation events from the geologic record.
3. 1994. Helped develop hypertext markup language (HTML) pages for online pharmacology education at the University of Utah. HTML was fairly new at that time, and NCSA's Mosaic was the only web browser.
4. 1996-1997. Participated in research done by the Department of Medical Informatics at the University of Utah evaluating the NLM's metathesaurus in evaluating the semantic meaning of plain text phrases from medical records.
5. 1997. Developed a probability propagation algorithm for handling mixed discrete and continuous joint probability distributions in Bayesian networks. Wrote C++ code to implement and test the algorithm on a simple Bayesian network modeling the diagnosis of myocardial infarction from serum enzymes.
6. 1998-1999. Developed a simple rule-based expert system to help interpret thromboelastogram test results. The system runs in a browser using dynamic html and javascript code to generate a text interpretation based on four input parameters.

## Grants:

1. July 2002 – June 2004. Establishment of a Cancer Tissue and Serum Bank in Arizona for the Purpose of Improving Life for Men with Prostate Cancer. 25% effort.  
Role: Collaborator                      Source: Arizona Disease Control Research Commission  
Amount: \$450,000
2. October 2002 – September 2004. Cancer Biology Fellowship Grant. 60% effort.  
Role: Principal Investigator                      Source: National Cancer Institute  
Amount: \$92,000
3. July 2002 – November 2006. Gastrointestinal SPORE Grant. 10% effort  
Role: Collaborator                      Source: National Cancer Institute  
Amount: \$2,700,000
4. July 2002 – November 2006. Apoptosis in Colon Cancer Chemoprevention Program Project Grant. 2% effort.  
Role: Collaborator                      Source: National Cancer Institute  
Amount: \$859,015
5. October 2004 – November 2006. Arizona Cancer Center Support Grant. 60% effort.  
Role: Co-Investigator                      Source: National Cancer Institute  
Amount: \$2,200,000
6. April 2005 – March 2006. Marker Coexpression in Colon Cancer. 15% effort.  
Role: Principal Investigator                      Source: National Cancer Institute  
Amount: \$20,000
7. July 2006 – June 2010. Barret's InterSPORE Grant. 5% effort  
Role: Collaborator                      Source: National Cancer Institute