

Grace Hyun J. Kim

CURRICULUM VITAE

PERSONAL HISTORY:

924 Westwood Blvd., Suite 650
Los Angeles, California 90024
(310) 481-7594 (office)

EDUCATION:

B.S.	Ewha Woman's University, Seoul, Korea, 1997 Mathematics
Internship	CHUNG-ANG UNIVERSITY Women's Junior School, Seoul. Korea, 1996 Math intern teacher for 8 th grade
Credential	Teaching credential for middle and high schools, South Korea, 1997
Internship	GARTNER-GROUP Inc, Seoul, Korea, 1997a Marketing department
M.S.	California Polytechnic University, Pomona, CA, 2000 Applied Mathematics
M.S.	University of California, Los Angeles, CA, 2001 Biostatistics
Ph.D.	University of California, Los Angeles, CA, 2007 Title of Dissertation: "Classification in CT image data" Biostatistics, (Advisor: Gang Li)
Postdoctoral	University of California, Los Angeles, CA, 2009 Radiological Science, (Advisor: Jonathan G. Goldin)
Mentoring	University of California, Los Angeles, CA, 2021 Radiological Science, Mentoring Program (Advisor: Denise Aberle)

ACADEMIC APPOINTMENTS:

2009 – 2013	Adjunct Assistant Professor, Department of Radiological Science, University of California, Los Angeles, CA
2011 –2013	Adjunct Assistant Professor, Department of Biostatistics, University of California, Los Angeles, CA
2013 – 2016	Assistant Professor in Residence, Department of Radiological Science, University of California, Los Angeles, CA
2013 – 2016	Assistant Professor in Residence, Department of Biostatistics, University of California, Los Angeles, CA
2016 – 2022	Associate Professor in Residence, Department of Radiological Science & Biostatistics, University of California, Los Angeles, CA
2022 – Present	Professor in Residence, Department of Radiological Science & Biostatistics, University of California, Los Angeles, CA

PROFESSIONAL EXPERIENCE:

2015 – Present	Statistician, Connective Tissue Disease-Interstitial Lung Disease, Department of Rheumatology, University of California, Los Angeles, CA
2014 – Present	Co-director of Computer Vision and Imaging Biomarkers (CVIB), and Director of Biostatistics Core in CVIB, Department of Radiological Science, University of California, Los Angeles, CA
2011 – Present	Biostatistician, Department of Biostatistics, University of California, Los Angeles, CA
2011 – Present	Member, Jonsson Comprehensive Cancer Center, University of California, Los Angeles, CA
2017– Present	Research Consultant as a Lead Biostatistician, MedQIA, LLC. Imaging Contract Research Organization (supersizing data managers who perform the data quality control, running a meeting for data transfer planning, and reviewing data set prior to transfers)
2009 – Present	Biostatistician, Department of Radiological Science, University of California, Los Angeles, CA
2009 – 2017	Biostatistician & Data Management, MedQIA, LLC. Imaging Contract Research Organization (supersizing data managers who perform the data quality control, running a meeting for data transfer planning, and reviewing data set prior to transfers)
2007 – 2009	Post-Doctoral Employee, Department of Radiological Science, University of California, Los Angeles, CA
2001 – 2007	Graduate Student Researcher, Department of Radiological Science, University of California, Los Angeles
1999 – 2000	Instructor, Department of Mathematics, California State Polytechnic University, Pomona
1997 – 1998	Tutor, Learning Resource Center, California State Polytechnic University, Pomona
1997 – 1997	Researcher, Department of Computer Information System, California State Polytechnic University, Pomona
1995 – 1996	Director, Photo Department, AD Power United College Club, Seoul, Korea

PROFESSIONAL ACTIVITIES:

UNIVERSITY COMMITTEE SERVICE

Co-Chair of UCLA Computer Vision in Medicine Workshop, Theme of Lung CT Image Analysis, Feb/22/2008

Co-Chair of UCLA Computer Vision in Medicine Workshop, Theme of Computer-Aided Lung Cancer Screening, Feb/21/2014

Co-Chair of UCLA Computer Vision in Medicine Workshop, Theme of AI and Imaging Biomarkers: Progress and Challenges in Implementing into patient care, Feb/18/2023

Committee Member of UCLA Medical IRB 2 (oncology and hematology research) committee March 2014 - present

Member, Johnson Comprehensive Cancer Center 2008- present

Member, Connective Tissue Disease-Interstitial Lung Disease, Department of Rheumatology, David Geffen School of Medicine 2015- present

Scientific Mentor, CTSI Grant Writing Studio, 2018 – present

Search Committee for Director, Computational Integrated Diagnostics Program, Radiological Science, 2018

Committee Member of UCLA Radiological Science Integrated Diagnostic, September 2018 – present

Member, Curriculum Committee of Physics Biology, and Medicine, 2019- present

SCIENTIFIC SOCIETY MEMBERSHIP

American Statistical Association (ASA); 2004 – present

Society of Thoracic Radiology (STR); 2012 – 2017

Korean-American Scientists and Engineers Association (KSEA); 2013-present

American Society of Clinical Oncology (ASCO); 2013-2014

American Thoracic Society (ATS); 2017– present

ACTIVITIES in SCIENTIFIC SOCIETIES

Committee member of QIBA CT Modality comprised of members from the Volumetric CT and COPD Technical Committees, RSNA since 2008-2022

Organizer of topic contributed session #184, Development and Validation of Biomarker, Sponsored by Western North American Region (WNAR). Joint Statistical Meeting (JSM) sponsored by ASA, Aug/4/2008, Denver, CO.

Organizer of topic contributed session #459, Characteristics of Biomarker in the Clinical Development and Adoption, Sponsored by Biometrics Section, Joint Statistical Meeting (JSM) sponsored by ASA, Aug/5/2009, Washington, DC

Committee member of reviewing abstract for Quantitative Computer Tomography (QCT) session in Society of Thoracic Radiology (STR) June, 2012

Chair of topic contributed session #208951, *Patient Report Outcome and Biomarkers in Asthma*, Sponsored by Biometrics Section, Joint Statistical Meeting (JSM) sponsored by ASA, Aug/5/2013, Quebec, Canada

Scientific Committee member of the 2013 World Congress Thoracic Imaging sponsored by STR

RSNA-QIBA/FNIH FDG-PET Imaging Biomarker Qualification Committee members and advisors 2011-2012

Chair of Round Table Lunch Meeting, *Our Roles in Evaluating Biomarker in Clinical Trials*, Sponsored by FDA/DIA Statistical Forum, Apr/8/2014, Washington, DC

Chair of Math-Statistics Technology session 6, Bio-math and statistics, Sponsored by UKC and KSEA, Aug/9/2014, San Francisco, CA

Statistical Partnerships among Academe, Industry, and Government (SPAIG) member, sponsored by ASA, Oct/2014- present

Co-symposium Chair of Math-Statistics Technology symposium, Sponsored by UKC and KSEA, Aug/2015, Atlanta, GA

Chair of Math-Statistics Technology session 6, Bio-math and statistics, Sponsored by UKC and KSEA, Aug 2016, Dallas, TX

Co- symposium Chair of Math-Statistics Technology symposium, Sponsored by UKC and KSEA, Aug/2017, Washington, DC

Organizer of Korean-American Women in Science and Engineering of 9th & 10th West Coast Annual Conference by KSEA, May/16/2015 & Jan/16/2016, Pasadena, CA

Council Member of scholarship, KSEA August/2/2015- 2018

Chair of contributed session #700, Topics in Clinical Trial 3, Sponsored by Biopharmaceutical Section, Joint Statistical Meeting (JSM) sponsored by ASA, Aug/13/2015, Seattle, WA

Panel discussion member, Profile Guidance, QIBA Annual meeting Apr/13/2016

Chair of Round Table Lunch Meeting, **TL32: Oncology: Imaging Endpoints in Clinical Trials**, Sponsored by ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop, Sep/29/2016, Washington, DC

Member of the study team, Subpopulations and intermediate outcome measures in COPD study

Technical Council Member, KSEA July/1/2017- Jun/30/2020

Member of the Committee, Conference on Statistical Practice (CSP) sponsored by ASA, March/1/2016 –Feb/28/2020

Advisory Committee, Special Government Employee (SGE) Radiological Devices of the Medical Devices, FDA, Sep 2018- present
Provide advice on scientific, technical, and other related matters *per request*

Korean Women in Science and Engineering (KWiSE) mentoring program, Jul/1/2020- Current

Program & event director, ‘STEM Talk Concert: Series 2: Data Scientists’ organized by KWiSE with 8 invited speakers globally on June/19/2021 with 6 topics: (a) Big Challenges & FAIR (findability, accessibility, interoperability, and reusability), (b) Data Science in sustainable society in the aspect of Justice, Equity, Diversity and Inclusion toward AI development, (c) Important factors when making decision, (d) Precision medicine, (e) Deep learning, and (f) Promising areas and future direction

Honors and Awards Committee, KSEA July/2/2020-June/30/2023

Imaging Metrology and Standards Subcommittee [[MSSC](#)] Consultant, American Association of Physicists in Medicine (AAPM) Dec/30/2020- current, Consultant

Medical Imaging and Data Resource Center Subcommittee [[MIDRC](#)], American Association of Physicists in Medicine (AAPM) Jul/30/2021-current, Guest Technology Development Project 3c, "Development of bench-marking methods for the various technology assessment and clinical task in COVID-19 research and translation"

Chair of Round Table Lunch Meeting, *TL14: Big Data*: Sponsored by ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop, Sep/23/2021, Washington, DC

Member of Data Safety Monitoring Board, Curocell C&R Research Inc., Feb 2022 - current

Pulmonary Fibrosis Foundation (PFF) FDA White Paper Working Group: A key initiative in the new plan focuses on engaging the US Food and Drug Administration in a dialogue on additional clinical trials endpoints and study designs, Feb/2022 .

OTHER RESEARCH-RELATED ACTIVITIES

Investigator of Reference Image Database to Evaluate Response (RIDER) 2009-2010

Investigator of Quantitative Imaging Biomarker (QIBA) initiated by RSNA: working on study design and statistical analyses plan in the experiment of 1A, 1B and 1C. 2009-current

Organizer of visit of Dr. Sue Jane Wang, associate director, Adaptive Design and Pharmacogenomics, from Office of Biostatistics, Office of Translational Sciences, CDER, FDA, two sessions of a) Adaptive versus Non-adaptive Biomarker Enrichment in Pharmacogenomics Trials and b) Biomarker Development and Its Qualification, joint sponsored by Department of Biostatistics, School of Public Health, and Department of Radiological Science, David Geffen School of Medicine at UCLA, May/12-13/2010, Los Angeles, CA

UCLA/AUPO Introduction to Clinical Research course, Sep/20/2014- Sep/22/2013, a discussion leader as role of biostatistician in helping clinical study design in the topic of appropriate/inappropriate control groups with Dr. Thomas Leitman and Dr. Steven Piantadosi.

NIH SREA MEDI Study Section Review June 2016, Reviewed 10 grants (Agenda Sequence Number 306352)

DoD Ad-hoc Section Review December 2016, 2019, 2023 (PRMRP)

NIH SREA BMIT-A Study Section Review June 2017, Reviewed 4 grants (Mail Reviewer)

NIH SREA MEDI Study Section Review June 2019, Reviewed 9 grants (Agenda Sequence Number 365433)

NIH ZRG1 GGG-K (91) Research related to Coronavirus Disease 2019 (COVID-19), Research Review, Dec 2019, Reviewed 7 grants

NIH ZHL1 CSR-O (O2) Catalyze Product Definition, Study Section Research Review, Aug 2021, Reviewed 2 grants (Agenda Sequence Number 419233)

NIH ZHL1 CSR-O (F2) Catalyze Product Definition, Study Section Research Review, Dec 2021, Reviewed 2 grants (Agenda Sequence Number 431533)

NIH ZHL1 CSR-M (M1) 1: Special Emphasis Panel/Scientific Review Group 2022/05

NIH NCI ZCA1 TCRB-9 (M2): Special Emphasis Panel/ Scientific Review Group Mar 2023, Informatics Methods for Cancer Research), Reviewed 6 grants

NIH ZHL1 CSR-O (M1) Catalyze Product Definition, Study Section Research Review, May 2023 (2023/05), Reviewed 1 grant (Agenda Sequence Number 469473)

Department of Defense (DoD) Congressionally Directed Medical Research Programs (CDMRP), scientific reviewer, PRMRP FY23, DIS-PF, Pulmonary Fibrosis Discovery Award (2023/06, 2023/07)

EDITORIAL ACTIVITIES

Reviewer of *International Journal Artificial Intelligence in Medicine* (2009-2010)

Reviewer of *Journal of Biopharmaceutical Statistics* (2009-2010)

Reviewer of *Academic Radiology* (2009- current)

Reviewer of *European Radiology* (2012- current), Editorial Board 2021

Reviewer of *Medical Physics* (2013- current)

Reviewer of *Medical Engineering and Physics* (2013- current)

Reviewer of *Statistical Methods Medical Research* (2014- current)

Reviewer of *IEEE Transactions on Medical Imaging* (2016- current)

Reviewer of *PLOS ONE* (2016- current)

Reviewer of *Chest* (2020- current)

SUPERVISED STUDENTS:

Teaching Experience:

Lecturer (*BIOSTAT 403A*), "*Computer Management of Health Data*", part of lecture series in large health data management, design, and application of statistics software SAS, Fall 2011. Teaching basic data management related to a clinical protocol and sorting, merging, and query of data quality check using statistical software.

Instructor (*BIOSTAT 203A*), "*Introduction to Data Management and Statistical Computing*", part of lecture series in data science in large health data management, design, and application of statistics software SAS, Fall 2020, Fall 2021, Fall 2022. Teaching basic data management related to a clinical protocol and sorting, merging, and query of data quality check as well as text mining using SAS and R of statistical software.

Instructor (*BIOSTAT 597*), "*Preparation for Master's Comprehensive or Doctoral Qualifying Examinations*", Fall 2012. Supervising students for their master examination, Fall 2012. Providing the guidance and supervising in running the real research data with statistical software.

Instructor and co-course originator (*BIOSTAT 245*), "*Advanced Seminar: Biostatistics*". Winter 2012, 2013, Winter 2014, Fall 2014, Winter 2015, Winter 2016. Together with one of faculty from Biostatistics department, organized and put together a seminar-oriented course for PhD Biostatistics students which covered an advanced understanding and the role that various areas of biostatics including applied genetic/imaging areas.

Instructor (*BIOSTAT 596*), “*Directed Individual Study or Research*”, guided students for their master thesis, Fall 2012, Winter 2013, Spring 2013. Teaching a study design and unbalanced data analysis and writing manuscripts.

Instructor (*BIOSTAT 400*), “*Field Studies in Biostatistics*”, supervising students for their field work in imaging analysis for health promotion, Fall 2014. Providing the opportunity of experience in a research lab: collection, analysis of image data, and statistical analysis of the outcome from imaging data

Instructor (*PBMED 217*), “*Statistics and Data Analysis in Biomedical Physics*”. Fall 2015, 2016, 2017, 2019, 2021 and Winter 2023. Lecture for two hours; a laboratory for one hour. Introduction to computer-based statistical concepts, data analysis, and experimental design within biomedical physics research. Standard statistical packages and various statistical computing algorithms on relevant data sets within radiological sciences.

Instructor (*BIOENGR M228*), “*Medical Decision Making*”. Winter 2016, 2017 and 2018. Lecture for four hours; Overview of issues related to medical decision making. Introduction to concept of evidence-based medicine and decision processes related to process of care and outcomes. Basic probability and statistics to understand research results and evaluations, and algorithmic methods for decision-making processes (Bayes theorem, decision trees). Study design, hypothesis testing, and estimation. Focus on technical advances in medical decision support systems and expert systems, with review of classic and current research. Introduction to common statistical and decision-making software packages to familiarize students with current tools.

Guest Lecturer (*BIOENGR M224B*), “*Advances in Imaging Informatics*”. Spring 2016. Lecture for two hours; Teach statistical design based on the hypotheses and validation of the imaging outcomes, which are under-development.

Guest Lecturer (*BIOMATH 285*), “*High Throughput Data Analysis*”. Spring 2017, 2018, 2019, 2022 and 2023. Lecture for 1.5 hours; Teach Statistical methods in high throughput calculation, imaging- measurement, biomarkers, and radiomics.

Guest Lecturer (*BIOMATH M206B*), “*Methodology in Clinical Research II*”. Spring 2018. Lecture for 1.5 hours; Teach Statistical methods in medical decision making in a short version.

CT Physics Teaching, “Statistical Design and Concept”, Aug 2017, 2018, 2019, 2020 2021, 2022, and 2023. Lecture for 4 hours; teach Statistical methods in diagnostic testing and concept for 1st year radiology residents.

Co mentoring with Ben Ellingson BioMed High School Student Program, November 8, 2016 – February 28, 2017

Training as a Scientific Teaching Fellow, Mobile Summer Institutes on Scientific Teaching, 2018-2019 at UCLA, Howard Hughes Medical Institute & NSF.

Ph.D. Committee Member:

I have four Ph.D. students from Biostatistics and Physics Biology & Medicine (Biomedical Physics):

- 1) Eran Barnoy, M.S. (Biostatistics Sep 2010 – June 2012). Started his study as PhD candidate in the Biostatistics Department, but he left to Israel for his personal reasons. Eran has continuously worked on heterogeneous index in lungs of asthma patients. This work is soon to be submitted to Statistical journal. He was supported by the grant from QIBA (NHLBI- PB-EB-2010-159-JKS, HHSN268201000050C, RECOVERY – QIBA). He is currently a PhD student in the department of Electronic Engineering and a recipient of the most prestigious award, President’s Scholarship at Bar Ilan University in Israel. I wrote the letter of support for him.
- 2) Daniel Chong (Ph.D. Candidate May 2012 – 2016; UCLA Biomedical Physics). Research is a continuation of my patent. He works on interstitial disease classification modeling with updated features and robust experiments from Biomedical Physics at UCLA.
- 3) Maryam Khatonabadi, Ph.D. (2013; UCLA Biomedical Physics). I supervised her modeling the effective CT dose between vendors and demographic information
- 4) Sheng Wu (Ph.D. Candidate; Biostatistics Sep 2013 – Nov 2014). Working on imaging utilization in geriatric population. He was supported by ACR Neiman Institute Awards Grant

- 5) Yu Shi (Ph.D.; Biostatistics Sep 2015 – Spring 2019) Working on IPF prediction using HRCT imaging funded by R21HL123477-01A1. She is currently working at Meta Inc (Facebook).
- 6) John Hoffman (Ph.D.; Physics Biology & Medicine Mar 2016 – Mar 2018)
- 7) Anthony Hardy (Ph.D. Candidate; Physics Biology & Medicine 2018 – Dec 2019) Finished the final oral presentation
- 8) Wenxi Yu (Ph.D. Biostatistics Sep 2018 -June 2021); Biostatistics Spring 2019 – current) Working on IPF diagnosis using HRCT imaging funded by R21HL123477-01A1, SPIE 2021 Cum Laude Award, An Automatic Diagnosis of Idiopathic Pulmonary Fibrosis (IPF) Using Domain Knowledge-Guided Attention Models in HRCT images. She received two awards: Medical Imaging Cum Laude Award in Poster, SPIE- International Society for Optics and Photonics in 2021 and American Thoracic Society (ATS) Abstract Scholarship in 2021. She is currently working at Meta Inc (Facebook).
- 9) Alan Li (Ph.D candidate, Aug 2022): Qualified exam, Anisotropic Magnetic Nanoparticles as a theranostic platform for breast cancer therapy offering local tumor control with high imaging contrast and specific tumor killing via mechano-induced apoptosis

COMMUNITY SERVICE:

Mexico mission trip sponsored by United Methodist church, Pomona, CA (July 1999)

Teaching SAT math section, Los Angeles CA (July-August 2001, July-August 2005)

Feeding homeless people in Los Angeles downtown CA (December 2006)

Taking care of toddlers during Sunday service, Los Angeles CA (January 2007- July 2008)

Career day talk to the 1st, 2nd, 3rd grade students, a role of scientist/biostatistician at the department of radiology with emphasis on no smoking and no drug, organized at Balboa Magnet Elementary school, Northridge CA (November 2009, June 2010, November 2010)

Assisting carpool lane for students' drop off and pick up at Balboa Magnet Elementary school, Northridge CA (May 2010, May 2012, March 2012, September 2013)

Serving lunch for students and staff at Granada Baptist Elementary school once in a month, Granada Hill CA (September 2011 - January 2012)

Assisting the dress rehearsal for the Sound of Music musical, Metropolitan Educational Theatre Network, Northridge CA (August 2012)

Caring and Serving lunch for high school students and staff at Light of Love Mission Church, Pasadena CA (October 2012 – November 2014)

Teaching the 2nd grade elementary students for Approved Workman Are Not Ashamed (AWANA) program on every Friday evening at Light of Love Mission Church, Pasadena CA (September 2012 – June 2015)

Organizer and grader of National Mathematics, Science Competition and High School Physics Contest by KSEA, April/18/2015, Claremont, CA

Making a database and grading the mathematic exam, KSEA National Math and Science Competition, April/11/2015, Claremont, CA

Presentation of Introducing “The role of Biostatistician”, KSEA Major Fair for Junior and High school students, October/10/2015, Claremont, CA

Proctoring, Grading the mathematic exam and awards female students from KWiSE, KSEA National Math and Science Competition Claremont College, April/9/2016, Claremont, CA

Panel Discussant in Medical/Public Health, 2nd Career Workshop from Global Leaders Association led by students, May/11/2016, UCLA, Los Angeles, CA

Panel Discussant “The role of Biostatistician in academics and industry, and future outlook of your field”, KSEA Major Fair for Junior and High school students, Sep/30/2017, Van Nuys, CA

Teaching, Career pathway to biomedical scientists, KSEA- Southern California Chapter Spring Career & Mentoring Workshop, March/24/2018, House of Writers, Los Angeles, CA

Presenting, ‘Touch questions to ask: STEM or not STEM, and when do we make decisions?’. KSEA- Southern California, National Math Science Engineering, April/7/2018, Harvey Mudd College, Claremont, CA

Served as organizing Committee Robotic STEM Fair, occurred at Santa Monica College on Dec/1/2018, preparation and evaluation: June 2018 – January 2019

Volunteer Los Angeles County STEM Fair in March 2020, preparation and evaluation: October 2019 – current

Volunteer at Covenant House California: June 2019, Nov/26/2019

Volunteer for Homeless serving at Organization of St. Vincent De Paul, Canoga Park CA: July/2019 – current (biweekly)

Volunteer for Homeless serving at Central Lutheran Church, Van Nuys CA: December/8/2019

Serve as organizing Committee Robotic STEM Fair II, planning the event at Cal State Fullerton University on February/1/2020, preparation and evaluation: July 2019 – current

PTA, website maintenance, and Director, ANC Archery Club for Junior Olympic Archery Development (JOAD), USA Archery: January 2018 – current

Level 1 Instructor, USA Archery, 2019- current

Organized a Journal club, Medical Imaging Outcome Project (MIOP) with topics of statistics, clinical trials, drug development, medical imaging and Big data for mentoring high school students to enhance public understanding and increasing interest in learning and careers in science, technology, : June 2019 – current; One student participated in student competition and awarded Honorable Mentioned at the virtual conference Florence Nightingale Day 2020, hosted by KWiSE in collaboration with American Statistical Association and Caucus for Women in Statistics on October 24, 2020.

Served as a committee member for math competition from KSEA: June 2019 – current

70th Annual Los Angeles County Science & Engineering Fair Committee. March 19-21, 2020: Served as a judge in the engineering section and supervised a student for IPF prediction using logistic model. Characterizing Different Rates of Progression of Idiopathic Pulmonary Fibrosis Using Machine Learning.

Presented in the machine learning and application to interstitial lung disease on Sep/10/2020 at the undergraduate department of Mathematics Dept. College of Arts & Sciences Shippensburg University Shippensburg, PA 17257. Title: Machine-Learned Quantitative Imaging Biomarkers in Clinical Trials in Subjects with Interstitial Lung Disease using High Resolution Computed Tomography

Volunteer for Children’s Hunger Fund at Sylmar, CA: August/14/2020, Jan/16/2021. Feb/20/2021.

Regeneron International Science and Engineering Fair (ISEF): served as a judge for 12 studies from math session, May/3/2021

HONORS AND SPECIAL AWARDS:

CHUNG-ANG UNIVERSITY WOMEN'S School Board Community Scholarship (1992)
Cameron Bogue Statistician Memorial Scholarship, Cal Poly, Pomona (1998)
The Korean American Construction Company (1999)
Co-author: Cum Laude Poster, European Congress of Radiology (ECR), (2005)
American Association for Cancer Research (AACR), Scholar-in-Training Travel Award (2008)
Co-author: Honorable Mention, SPIE Medical Imaging meeting (2012)
Young Investigator Award, 3rd World Congress of Thoracic Imaging (WCTI) (2013)
Certificate of Merit, Best Scientific Exhibition Award, 3rd WCTI (2013)
Certificate of Appreciation, CHUNG-ANG UNIVERSITY College of Medicine (2015)
One of the best posters in Health Science, UCLA Research Conference on Aging (2015)
First author: One of top 10 abstracts in Pulmonary Fibrosis Foundation Summit (2017)
Co-author: 3rd prize in poster presentation, International Cancer Imaging Society (ICIS) (2019)
Last author: Medical Imaging Cum Laude Award in Poster, SPIE- International Society for Optics and Photonics, (2021)
Co-author: 3rd prize in oral presentation, International Cancer Imaging Society (ICIS) (2022)

RESEARCH GRANTS AND CLINICAL TRIAL FUNDING:

NIH/ Non-profit Organization:

Title	<i>Clinical Centers for Feasibility Studies on Retinoid Treatment in Emphysema (FORTE)</i>
Dates	06/01/1996 – 05/31/1999
Source/Institution	NIH/NHLBI N01-HR96143-01
Principal Investigator	Michael Roth, M.D.
Direct Costs	\$541,141
Role	Graduate Student Researcher
Percent of Effort	49%
Purpose	This project involves the use of imaging and other studies to evaluate the disease progression of emphysema in the lungs and its response using Retinoid treatments. The goal of the Radiology Core will be to coordinate imaging, data collection and quantitative image analysis of CT scans for patients who are being studied to evaluate disease progression of emphysema in the lungs and its response using Retinoid treatments.
Title	Statistical support in University of Minnesota / NIH Prime FORTE
Dates	05/01/2005 - 04/30/2008
Source/Institution	NIH/NHLBI 019152-001
Principal Investigator	Michael Roth, M.D.
Direct Costs	\$55,575
Role	Graduate Student Researcher
Percent of Effort	25%
Purpose	Statistical support in University of Minnesota / NIH Prime FORTE (Feasibility Studies on Retinoid Treatment in Emphysema) Radiology Core

Title Thoracic Research Group “Computer Aided Image Analysis”
Dates 07/01/2004 - 06/30/2009
Source/Institution UC Sales and Service Account
Principal Investigator Jonathan Goldin, M.D., Ph.D.
Direct Costs \$937,766 direct cost received to date
Roles Graduate Student Researcher, Post-doctoral scholar
Percent of Effort 49%
Purpose To develop, evaluate and validate new computer vision techniques

Title Itl06-10158 Computer –Aided Image Analysis for Treatment Targeting in Emphysema
Dates 07/01/2004 - 06/30/2009
Source/Institution UC Sales and Service Account
Principal Investigator Jonathan Goldin, M.D., Ph.D.
Direct Costs \$512,902 all years
Roles Post-doctoral scholar, Biostatistician/Scientist
Percent of Effort 49%, 20%
Purpose To develop new computer vision techniques for automatic segmentation of the lungs into airways and lobes in CT images. These techniques will overcome limitations of existing systems and be reliable even for abnormal (diseased) patients, making it feasible to perform structural and functional analysis of the lung lobes and airways in emphysema patients on a routine clinical basis.
 Specific Aim: Project will bring innovation to lung healthcare by using computer image analysis and decision support to optimize the treatment of emphysema.

Title UCLA JCCC CC SG Fund
Dates 12/01/2008 - 06/30/2010
Source/Institution NIH CA 016042
Principal Investigator Judy Gasson
Direct Costs \$512,902 all years
Roles Post-doctoral scholar, Biostatistician/Scientist
Percent of Effort 10%
Purpose To collaborate in developing cancer imaging biomarker.

Title Brain Tumor Funders Collaboration 20092623
Dates 01/01/2010 - 06/30/2012
Source/Institution UCLA Radiology Fund
Principal Investigator Whitney Pope, M.D., Ph.D.
Role Biostatistician/Scientist
Percent of Effort 5%
Purpose To collaborate in developing a combining Genomics with physiologic imaging biomarkers to predict and follow treatment response in glioma cancer imaging biomarker.

Title Organ Dose/Radiobiology Project
Dates 12/30/2010 - 12/29/2014
Source/Institution UCLA Radiology Fund, as part of Siemens Master Research Agreement with UCLA Department of Radiology
Principal Investigator Michael McNitt-Gray, Ph.D.
Role Biostatistician
Percent of Effort 10%
Purpose To collaborate as Statistician in development of methods to more accurately assess radiation dose to sensitive organs and methods to reduce that dose and investigations into biological dosimetry using in vivo and ex vivo assays.

Title RECOVERY - QIBA
Dates 04/01/2011 - 03/31/2012

Source/Institution	NHLBI-PB-EB-2010-159-JKS, HHSN268201000050C
Principal Investigator	Daniel Sullivan
Direct Costs	UCLA Radiology Fund
Role	Biostatistician
Percent of Effort	10%
Purpose	To collaborate in statistical design and analysis in estimating variance of multi-scanner s in QIBA “Inter-scanner/inter-clinic comparison of reader nodule sizing in CT imaging of a phantom” in 1C experiment.
Title	RECOVERY - QIBA
Dates	04/01/11 –03/31/12
Source/Institution	NHLBI-PB-EB-2010-159-JKS, HHSN268201000050C
Principal Investigator	Daniel Sullivan
Direct Costs	UCLA Radiology Fund
Role	Biostatistician
Percent of Effort	20%
Purpose	(Called 1C project): To collaborate in statistical design and analysis in estimating variance of multi-scanner s in QIBA “Inter-scanner/inter-clinic comparison of reader nodule sizing in CT imaging of a phantom” in 1C experiment. (Called 1B project): To collaborate in statistical design and analysis in estimating variance of multi-scanner s in QIBA Inter- /inter-comparison of reader nodule sizing in CT imaging of MSK coffee break in 1B experiment.
Title	RECOVERY - QIBA
Dates	08/01/2011 - 07/31/2012
Source/Institution	NHLBI-PB-EB-2010-159-JKS, HHSN268201000050C, HHSN268201000050C (15.a)
Principal Investigator	Daniel Sullivan
Direct Costs	UCLA Radiology Fund
Role	Biostatistician
Percent of Effort	10%
Purpose	(Called 1B extension project): to collaborate in statistical design and analysis in estimating variance of multi-scanner s in QIBA Inter- /inter-comparison of reader nodule sizing in CT imaging of MSK coffee break in 1B experiment.
Title	RECOVERY - QIBA
Dates	08/01/2011 - 07/31/2012
Source/Institution	NHLBI-PB-EB-2010-159-JKS, HHSN268201000050C, HHSN268201000050C (16.a)
Principal Investigator	Daniel Sullivan
Direct Costs	UCLA Radiology Fund
Role	Biostatistician
Percent of Effort	10%
Purpose	QIBA (called 3A project): A Statistical Analysis and Setting Re-Usable Infrastructure in Statistical code for Large-Scale Algorithm
Title	LAM Foundation Pilot Project Award
Dates	01/01/2012 - 12/31/2013
Source/Institution	LAM Foundation
Principal Investigator	Pechin Lo, Ph.D.
Role	Investigator
Percent of Effort	10%
Purpose	To develop a radiological imaging feature predictive and to characterize the patients’ image data with refining and validating qualitative and quantitative features of lung
Title	Cell invasion, motility, and proliferation level estimate maps in gliomas
Dates	09/01/2012 - 08/31/2014
Source/Institution	NIH NCI, R21

Principal Investigator	Benjamin Ellingson, Ph.D.
Roles	Biostatistician/Lead Data Manager
Direct Costs	\$133,000 (estimated portion allocated from CVIB clinical trial funding)
Percent of Effort	5%
Purpose	Cell invasion, motility, and proliferation level estimate maps in gliomas, Predictive Biomarker for GBM using Apparent Diffusion Coefficient fMRI images
Title	Geriatric Imaging Utilization
Dates	09/01/2013 - 08/31/2014
Source/Institution	ACR Neiman Institute Awards Grant
Principal Investigator	William Hsu
Roles	Biostatistician/Lead Data Manager
Direct Costs	\$133,000 (estimated portion allocated from CVIB clinical trial funding)
Percent of Effort	Supervising 40% GSR (Sheng)
Purpose	Geriatric Imaging Utilization: to quantitatively characterize the role and value of imaging in the care of an elderly outpatient population
Title	Quantitative CT Imaging for Response Assessment When Using Dose Reduction Methods
Dates	05/01/2014 - 12/30/2017
Source/Institution	NIH, NCI, U01CA181156
Principal Investigator	Michael McNitt-Gray, Ph.D.; Matthew Brown, Ph.D.; Grace Kim, Ph.D.; Jonathan Goldin, M.D., Ph.D.
Role	Co-PI
Direct Costs	\$300,000 (each year)
Percent of Effort	15%
Purpose	The goal of this project is to investigate the effects of radiation dose reduction techniques used in CT imaging on quantitative measures used in response assessment of clinical trials patients.
Title	Effectiveness of IV Acetaminophen and IV Ibuprofen in Reducing Post Procedural Pain in the UFE Procedure (ClinicalTrials.gov Identifier: NCT02227316)
Dates	08/01/2014 - 02/29/2016
Source/Institution	UCLA CTSI Seed Grant
Principal Investigator	Cheryl Hoffman
Role	Biostatistician
Percent of Effort	5%
Purpose	A prospective, double blind, randomized, placebo controlled study to compare the effectiveness of intravenous acetaminophen and intravenous ibuprofen in reducing the use of opiates and anti-emetics to control post procedural pain and nausea in uterine fibroid embolization procedures.
Title	UCLA Cryoablation Study
Dates	12/03/2013 - 12/31/2014
Source/Institution	Endocare Inc. 20142494
Principal Investigator	Edward Lee & Fereidoun Abtin
Role	Biostatistician
Percent of Effort	1.2%
Purpose	UCLA Cryoablation Study: This is pre-clinical study to assess utility of soft cream in procedure of cryoablation
Title	Ph-Weighted Molecular MRI in Brain Tumors
Dates	07/01/2015 -06/30/2019
Source/Institution	RSG-15-003-01-CCE
Principal Investigator	Benjamin Ellingson, Ph.D.
Role	Co-Investigator
Percent of Effort	4.2%
Purpose	To evaluate quantitative imaging biomarkers

Title A New Paradigm of Cardiovascular MRI for Pediatric Congenital Heart Disease
Dates 07/07/2015 - 07/06/2020
Source/Institution NIH-NHLBI 1R01 HL127153
Principal Investigator Peng Hu
Role Co-Investigator
Percent of Effort 5%
Purpose To develop advanced 4D cardiovascular MRI and flow imaging techniques for imaging children with congenital heart disease.

Title Validating Cardiac MRI Biomarkers and Genotype-Phenotype Correlation for DMD
Dates 07/07/2015 - 07/06/2020
Source/Institution NIH-NHLBI 1R01 R01HL131975-01
Principal Investigator Daniel Ennis
Role Co-Investigator
Percent of Effort 5%
Purpose To develop and validate cardiac MRI Biomarkers and associated with Genotype for boys with Duchenne Muscular Dystrophy.

Title Prediction of IPF Progression Using HRCT Imaging Patterns
Dates 08/15/2015 - 07/31/2017
Source/Institution NIH-NHLBI R21HL123477-01A1
Principal Investigator Self
Role Principal Investigator
Percent of Effort 13.5%
Purpose The goal of this project is that quantitative imaging phenotypes determined either from single time points or from texture transitions occurring short-interval sequential time points, used alone or in multivariate model can predict disease progression in advance of standard clinical indicator of deterioration.

Title Identifying Multiphasic MDCT Biomarkers
Dates 2016 - 2017
Source/Institution Society of Abdominal Radiology
Principal Investigator Jonathan Young
Role Biostatistician
Percent of Effort 13.5%
Purpose Identifying Multiphasic MDCT Biomarkers to Predict the Expression of Carbonic Anhydrase-IX, Hypoxia-Inducible Factor 1 α , and PTEN, Important Prognostic Molecular Targets in Clear Cell Renal Cell Carcinoma

Title A Phase II, Randomized, Double-blind, Placebo Controlled, Parallel-group, Multicenter Trial to Evaluate the Efficacy and Safety of Abituzumab in Subjects With Systemic Sclerosis-associated Interstitial Lung Disease (SSc-ILD) (ClinicalTrials.gov Identifier: NCT02745145)
Dates 2016 - 2018
Source/Institution EMD Serono Research & Development Institute, Inc. via MedQIA Imaging CRO subcontract to UCLA CVIB Laboratory
Principal Investigator Matthew Brown, Ph.D.
Direct Costs \$125,000 (estimated portion allocated from CVIB clinical trial funding)
Roles Supervising statisticians who ran data quality control (QC) check, documented the QC report and data revision reports. Reviewing the data prior to transfers. Statistical consulting in imaging analyses and interpretation of quantitative lung fibrosis (QLF) scores. Confirmed the eligibility of 5% in screening by QLF.

Title Prediction of Idiopathic Pulmonary Fibrosis Using Imaging Pattern in Elderly Population
Dates 07/01/2016 - 06/30/2018

Source/Institution	GENENTECH, INC.G-45335
Principal Investigator	Self
Role	Principal Investigator
Percent of Effort	10%
Purpose	To quantitative imaging phenotypes determined either from single time points or from texture transitions occurring short-interval sequential time points, used alone or in multivariate model can predict disease progression in the elderly population and understand the differences in advance of standard clinical indicator of deterioration.
Title	Molecular and Imaging Biomarkers for Early Lung Cancer Detection in the Setting of Indeterminate Pulmonary Nodule
Dates	09/23/2016 - 08/31/2021
Source/Institution	4500002285 BOSTON UNIVERSITY
Principal Investigator	Denise Aberle, M.D.
Role	Investigator
Percent of Effort	5%
Purpose	To develop and evaluate the molecular and imaging biomarkers for early lung cancer detection in the setting of indeterminate pulmonary nodule.
Title	Diagnosis and Early Prediction of IPF Progression Using HRCT Imaging Patterns
Dates	08/15/2018-07/31/2020
Source/Institution	NIH-NHLBI R21HL 140465-01A1
Principal Investigator	Self
Role	Principal Investigator
Percent of Effort	12%
Purpose	The goal of this project is to develop an automatic diagnosis of idiopathic pulmonary fibrosis (IPF) from texture features and deep learning and to predict disease progression in advance of standard clinical indicator of deterioration.
Contribution	Submitted a conditional patent to UCLA
Title	Scleroderma Lung Study III (SLS III)
Dates	09/01/2017 - 08/31/2022
Source/Institution	Genentech, Inc. ML30175
Principal Investigator	Michael Roth
Role	Co-Investigator
Percent of Effort	12%
Purpose	Combining the anti-fibrotic effects of pirfenidone (PFD) with mycophenolate (MMF) for treating scleroderma related interstitial lung disease.
Title	Registry of AngioVac Procedures In Detail (RAPID)
Dates	12/1/2017 - 12/1/2019
Source/Institution	AngioDynamics
Principal Investigator	John M. Moriarty
Role	Biostatistician
Percent of Effort	5%
Purpose	To collect high quality patient safety and effectiveness data on use of the AngioVac system for various anatomic locations. The immediate and short-term functional and clinical outcome data for all patients who have the AngioVac catheter deployed into their venous system. My role is to provide Data Quality Control check and produce the summary reports and tables
Title	Imaging Signature- Idiopathic Pulmonary Fibrosis (IS-IPF)
Dates	10/01/2019 - 12/31/2021
Source/Institution	Boehringer Ingelheim IIS2018-10770 IIS
Principal Investigator	Self

Role Principal Investigator
Percent of Effort 0%, PI salary support unallowable
Purpose Evaluating automatic diagnosis of IPF and testing the early sign of progression

Title Ferumoxytol-Enhanced Cardiac MRI for Ischemic Heart Disease (IHD)
Dates 07/01/2020 - 06/30/2022
Source/Institution NIH/NHLBI
Principal Investigator Nguyen
Role Co-Investigator
Percent of Effort <5%
Purpose Evaluating imaging driven makers from Ferumoxytol-enhanced MRI and testing the early sign of progression in IHD.

Title Robust Clinical Translation of CT Imaging Biomarker in COPD for Endobronchial Valve (EBV) Patient Selection
Dates 04/01/2021 – 03/31/2025
Source/Institution NIH, NHLBI, R01HL153964-01
Principal Investigator Michael McNitt-Gray, Ph.D.; Matthew Brown, Ph.D.; Grace Kim, Ph.D.; Jonathan Goldin, M.D., Ph.D. Fred Noo Ph.D.
Role Co-PI
Direct Costs \$ (each year)
Percent of Effort 15%
Purpose The goal of this project is to investigate the predictive classifier for EBV response. This requires the robust quantitative fissure scores and vessel segmentation and quantification.

Title Computational Toolkit for Normalizing the Impact of CT Acquisition and Reconstruction on Quantitative Image
Dates 09/1/2020 – 09/01/2022
Source/Institution NIH, NHLBI, R56EB031993-01
Principal Investigator Michael McNitt-Gray, Ph.D. William Hsu Ph.D.
Role Investigator
Direct Costs \$ (each year)
Percent of Effort 5%
Purpose The goal of this project is to summarize the impact of CT and develop a toolkit for normalization in three applications.

Title The gut microbiome as a screening tool for interstitial lung disease in systemic sclerosis
Dates 11/30/2021- 11/30/2023
Source/Institution Boehringer Ingelheim IIS2020-1917
Principal Investigator Elizabeth Volkmann
Role Investigator
Percent of Effort CVIB support
Purpose Evaluating automatic diagnosis of IPF and testing the early sign of progression

Title Framework for Radiomics Standardization with Application in Pulmonary CT Scans
Dates 07/1/2022 – 06/30/2026
Source/Institution NIH, NHLBI, R56EB031993-01
Principal Investigator Michael McNitt-Gray, Ph.D. Subaward PI, Gang/Stayman Prime

Role	Investigator
Direct Costs	\$ (each year)
Percent of Effort	15%
Purpose	The goal of this project is to standardize the radiomic features using the post processing from the feature space. The major goal is to develop analytic tools for modeling, predicting, and estimating radiomics under realistic conditions including noise and blur. Apply standardized approaches in pulmonary radiomics models in multi-site human studies
Pending	
Title	Imaging Signature- Progressive Pulmonary Fibrosis (IS-PPF)
Dates	09/15/2023 - 09/14/2026
Source/Institution	Boehringer Ingelheim ERS 2022-3630 Kim –UCLA ISR2023-00000276 [ACISR-23-0760]
Principal Investigator	Self
Role	Contact Principal Investigator
Percent of Effort	12%, PI salary support
Purpose	Evaluating AI-driven score of single timepoint prediction from CT image as the early sign of progression in of pulmonary fibrosis
Title	
Dates	
Source/Institution	NIH, NHLBI R61/R33
Principal Investigator	
Role	Principal Investigator
Direct Costs	\$ (each year)
Percent of Effort	10%
Purpose	The research goal is to extent the available machine learning quantitative lung fibrosis (QLF) score and develop a deep learning QLF score (R61). The next research goal is to implement a separate module of software for testing QLF score that is easily accessible in a quantitative report form (R33) toward 510k clearance.
Title	Cognitive AI
Dates	
Source/Institution	NIH, NIBIB R21
Principal Investigator	
Role	Investigator
Direct Costs	\$ (each year)
Percent of Effort	3%
Purpose	The research goal is to develop a robust system for the specific task new lesion identification and subsequent classification of progressive/non-progressive disease in longitudinal computed tomography (CT) studies that should perform as well as, or better than, a human reader under adjudication.

PATENTS

1. Title: Automated Image System (Case ID 2013-078, UC-2013-078-2-LA-EP) [Lead Inventor: Grace Hyun J. Kim]: filed and patented. Date of Invention Report submitted was on Aug/3/2012 : Transitional Changes in Quantitative Interstitial Lung Disease [Issued Patent: **UC-2015-0324982-A1**]. This computer aided diagnosis, QLF score is continuously used in two NIH clinical studies (ClinicalTrials.gov identifier: NCT00883129, ‘Comparison of Therapeutic Regimens for Scleroderma Interstitial Lung Disease (The Scleroderma Lung Study II) (SLSII)’; ClinicalTrials.gov identifier: NCT00114530, ‘Scleroderma: Cyclophosphamide or Transplantation (SCOT)’); This QLF score (so called computer-assisted scores of percent of area of lung parenchymal fibrosis) has been used as a *secondary or exploratory outcome* in five industry clinical studies in phase 2 (ClinicalTrials.gov identifier:

NCT01766817, NCT00764309, NCT01262001, NCT01890265, NCT01872689 (exploratory), NCT0264848 (exploratory), NCT02453256 (exploratory)). Phase 3b trials (NCT01979952) is also included, which was terminated early (1. Sample size adjusted from 275 to 113; 2. planning to change 12 month duration, but changed to 6 month changes in Feb/4/2015; and terminated at the sample size of 113)

This article reported the QLF scores in the independent cohort (NCT01262001): Raghu G, Scholand MB, de Andrade J, Lancaster L, Mageto Y, Goldin J, Brown KK, Flaherty KR, Wencel M, Wanger J, Neff T, Valone F, Stauffer J, Porter S. FG-3019 anti-connective tissue growth factor monoclonal antibody: results of an open-label clinical trial in idiopathic pulmonary fibrosis *Eur Respir J.* 2016;47(5):1481-91; Richeldi L, Fernández Pérez ER, Costabel U, et al. Pamrevlumab, an anti-connective tissue growth factor therapy, for idiopathic pulmonary fibrosis (PRAISE): a phase 2, randomised, double-blind, placebo-controlled trial. *Lancet Respir Med.* 2020;8(1):25-33. doi:10.1016/S2213-2600(19)30262-0

Palmer SM, Snyder L, Todd JL, Soule B, Christian R, Anstrom K, Luo, Gagnon YR, Rosen G, Randomized, Double-Blind, Placebo-Controlled, Phase 2 Trial of BMS-986020, a Lysophosphatidic Acid Receptor Antagonist for the Treatment of Idiopathic Pulmonary Fibrosis, *Chest.* 2018; 154 (5):1061-69

Approved on Mar 1, 2021 by European Patent Office (EPO) Application No. 13852985.4. (UC-2013-078-2-LA-EP). Proceed with validation in Germany (DE), France (FR), United Kingdom (GB), and Sweden (SE).

2. Title: 3D Population Maps (Case No: 2014-594), [Lead Inventor Dieter R Enzmann]: file and not yet patented. Date of Invention Report submitted was on Feb/5/2014. Apparatus and Method for Generating a Probability Map of a Biopsy Site [Provisional Patent: UC-2017-103-2-LA; U.S. Provisional Application Serial No. 62/567,290, filed on October 3, 2017] [Issued Patent: UC-2017-103-2-LA; U.S. Application Serial No. 16/828,319, Patent No. 1134640, Confirmation No. 6764, issued on May 24, 2022]. Title: Probability Map of Biopsy Site (Case No: 2017-103; Issued UC-2017-103-3-LA-US 050422) [Lead Inventor: Dieter R. Enzmann]: file and not yet patented. Date of Invention Report submitted was on Aug/11/2016. Use Bayesian inference or Bayesian Net to predict the most relevant biopsy site as part of precision medicine.
3. Title: Idiopathic Pulmonary Fibrosis (Case No: 2019-731; UC2019-731-3 790482.00303.) [Lead Inventor: Grace Hyun J. Kim]: file and not yet patented. Date of Invention Report submitted was on March/18/2019. Early Prediction of Progression in Idiopathic Pulmonary Fibrosis Using a Single Time Point HRCT. This is part of product from R21 of NIH-NHLBI R21HL123477-01;
4. Title: Automated Diagnosis of Idiopathic Pulmonary Fibrosis (Case No 2020-387) filed. [Lead Inventor: Grace Hyun J. Kim]. file and not yet patented. Date of Invention Report submitted was on Oct/11/2019. This is part of product from R21 NIH-NHLBI R21HL 140465-01. Diagnosis of IPF model is based on deep learning technique with D-optimizers in slice selection using HRCT Imaging Patterns.
5. Title: *QUANTITATIVE COVID-19 SCORES USING HIGH RESOLUTION COMPUTED TOMOGRAPHY* (UC Case No. UC-2022-225-1 Provisional Application Serial No. 63/336,609)

2020-387-3 AUTOMATIC DIAGNOSIS OF IDIOPATHIC PULMONARY FIBROSIS (IPF) USING HIGH-RESOLUTION COMPUTED TOMOGRAPHY (HRCT)

2019-731-2 EARLY PREDICTION OF PROGRESSION IN IDIOPATHIC PULMONARY FIBROSIS USING A SINGLE TIME POINT HRCT SCAN

2016-635-1 COPYRIGHT: AUTOMATED IMAGE SYSTEM FOR QUANTITATIVE ASSESSMENT OF LUNG DISEASE

2013-078-2 AUTOMATED IMAGE SYSTEM FOR SCORING CHANGES IN QUANTITATIVE INTERSTITIAL LUNG DISEASE

LECTURES AND PRESENTATIONS:

1. "Texture Feature Analysis using Principal Component & Factor Analysis with validating -950Hu Density Mask", Joint Statistical Meeting, Toronto, Canada, August, 2004.
2. "Emphysema Classification based on a novel texture feature approaches", American Thoracic Society (ATS), San Diego, California, May, 2005.
3. "Bayesian Spatial Hierarchical Modeling for Asthmatic Patients and Non-asthmatic Adults", Joint Statistical Meeting (JSM), Minneapolis, Minnesota, August, 2005.
4. "Variable Selection and Classification Using Computed Tomography (CT) Medical Image Data", Joint Statistical Meeting (JSM), Salt Lake City, Utah, August, 2007.
5. "Classification in Scleroderma Lung disease", Evening lecture, Seoul Asian Hospital, September 2007.
6. "Development of an Automated Fibrosis Score Using CT Texture Features in Patients with Scleroderma", Radiological Society of North America (RSNA), Chicago IL, November, 2007.
7. "CT Image as Biomarker in Clinical Trial", UCLA Computer Vision in Medicine Workshop, Los Angeles, CA, February, 2008.
8. "Cyclophosphamide versus Placebo in Scleroderma Lung Study using Quantitative Fibrosis Score", American Thoracic Society (ATS), Toronto, Canada, May, 2008.
9. "Quantitative Lung Fibrosis (QLF) Score for Computer Tomography (CT) Data in Interstitial Lung Disease", Joint Statistical Meeting (JSM), Colorado, Denver, August, 2008.
10. "Imaging biomarker in a view as biostatistician", Noon lecture, Discussion Room, Department of Radiology, Seoul National University Hospital, October 17, 2008
11. "Evaluation of an automated fibrosis score using CT texture features in patients with scleroderma", Mini symposium, American Thoracic Society, San Diego, May 19, 2009.
12. "Quantitative Lung Fibrosis as Biomarker in Treatment Efficacy in Scleroderma", Sunrise Seminar (SS117), American Thoracic Society, San Diego, May 18, 2009.
13. "Can Apparent Diffusion Coefficient (ADC) be a predictive biomarker in Glioblastoma multiforme (GBM) patients", Joint Statistical Meeting (JSM), Washington, DC, August, 2009.
14. "Cyclophosphamide versus Placebo in Scleroderma Lung Study using Quantitative Fibrosis Score", Radiological Society of North America (RSNA), Chicago IL, December, 2009
15. "Effect of Denoise in Classification", UCLA Department of Radiological Sciences and the Research Affairs Office, Research Seminar Dinner, Los Angeles, CA, November 18, 2009.
16. "Imaging Biomarker in Clinical Trial", UCLA Computer Vision in Medicine Workshop, Los Angeles, CA, February 19, 2010.
17. "Cyclophosphamide versus Placebo in Scleroderma Lung Study using Total Quantitative Score of Fibrosis, Groundglass Opacity, and Honeycomb", American Thoracic Society, New Orleans, LA, May 16, 2010.
18. "Enhanced Clinical Trial Study Design Using Imaging Biomarkers in COPD/Emphysema", Sunrise Seminar (SS206), American Thoracic Society, New Orleans, May 18, 2010.
19. "Development of Imaging Biomarkers for Clinical Trials: Applications in Glioblastoma Multiform", Joint Statistical Meeting, Vancouver, Canada, August 2010.
20. "Biostatistics, Analytical Support and Evaluation (BASE) Unit in Jonsson Cancer at UCLA ", Moving Forward in the Efficient Management and Use of Core Facilities, National Center for Research Resources, NIH, October 15, 2010
21. "Quantitative Pulmonary Fibrotic Reticular Pattern as Imaging Biomarker in Treatment Efficacy in Scleroderma/IPF", Sunrise Seminar (SS214), American Thoracic Society, Denver, May 17, 2011.
22. "Evaluation Process of Imaging Biomarker: Quantitative Lung Fibrosis (QLF) Score for Computer Tomography (CT) Data in Interstitial Lung Disease", Biostatistical Summer Seminar, Seoul National University, Seoul, Korea, August 4, 2011.

23. "Imaging Biomarker and Clinical Trial", Seminar, Radiology, Nijmegen Hospital/University, Nijmegen, Netherland, September 26, 2011.
24. "Association of texture-based quantitative fibrotic patterns and pulmonary function test", European Respiratory Society, Amsterdam, Netherland, Session 157, September 25, 2011.
25. "Changes in ADC Histograms between Pre-surgical Scan and Post-recurrence Scan Predict the Survival of GBM Patient", Scientific Poster Informal Presentation, RNSA, November 27, 2011
26. "An Insightful 5D Display of Air Trapping in Anatomic Segments of CT in Asthma Patients", Education Exhibit, RNSA, 2011
27. "Correlation of Quantitative Fibrosis Score with Pulmonary Function Tests in Scleroderma Population", Scientific Paper Presentation, RSNA, December 2, 2011
28. "Classification of CT Image in interstitial Lung Disease and Clinical Trials" Applied Statistics Seminar, Statistics Department, UCLA, 2-Oct 2012
29. "QIBA: Overview of completed Phantom Study", the joint QIBA Challenge and QI-Bench face-to-face meeting, NIST Campus, Gaithersburg, MD, Feb 25, 2013
30. "Denoise Using Noise characteristics in CT and Classification for Unbalanced Categories", Statistics in Imaging Section: Workshop on Statistical Image Analysis, Santa Fe, NM, Mar 7, 2013
31. "Denoise Using Noise characteristics in CT and Classification", UCR Statistics Colloquium, Riverside, CA, Mar 12, 2013
32. "Comparative Evaluation of Multiple Programs Designed to Estimate Nodule Volumes from CT Scans", May 20, ATS 2013
33. "An Index to Assess Multi-Factorial Transitional Changes in Interstitial Lung Disease", May 20, ATS 2013
34. "Lung Cancer - Non-small Cell Local-regional/Small Cell/Other Thoracic Cancers", June 01, ASCO 2013
35. "Quantitative CT Lung Fibrosis Score to Assess Longitudinal Changes in IPF Patients Treated with Immune Suppression", Seoul, Korea, June 9, WCTI, 2013
36. "Adaptive CT Denoising for Image Quality Control in Quantitative Assessment of Lung Fibrosis", Seoul, Korea, June 11, WCTI 2013
37. "Denoise using the characteristics of CT Images and Classification of Interstitial Lung Disease for a Multi-center Trial", Samsung Medical Hospital, Seoul, Korea, Jun 26, 2013
38. "Quantitative Imaging Biomarker and Noise Characteristics in Computerized Tomography", Montreal Quebec Canada, Joint Statistical Meeting, August 4, 2013
39. "Development and Evaluation of an Imaging Biomarker: A Transitional Research Approach", East Rutherford, NJ, UKC, Aug 10, 2013
40. "Denoise using the characteristics of CT Images and Classification", San Diego State University (SDSU), CA, Oct 8, 2013.
41. "Idiopathic Pulmonary Fibrosis: Comparison of a Quantitative Fibrosis Score and CT Indexes from Histogram as Biomarkers of Disease Severity and Surrogate Endpoints in Assessing Change", Scientific Paper Presentation, RSNA, December 4, 2013
42. "Analytic Development of Heterogeneous Patterns", Boston MA, Joint Statistical Meeting, August 6, 2014
43. "Initial Study of Spatial Heterogeneity in Lung Air-trapping", San Francisco, CA, UKC, Aug 9, 2014
44. "Quantitative Lung Fibrosis Score Using Low Dose Technique", Atlanta, GA, UKC, Aug 1, 2015
45. "The Utilization and Role of Elderly Imaging: Analysis Using Electronic Health Record Data", Providence, RI, International Conference on Health Policy Statistics (ICHPS), Oct 8, 2015
46. "The Role of Metrology in Quantitative Imaging", Quantitative Imaging Mini-Course Statistical Analysis/Metrology Issue, Chicago, IL, RSNA, December 1, 2015

47. “Robustness-driven feature selection in classification of fibrotic interstitial lung disease patterns in computed tomography using 3D texture features”, Claremont, CA, The Korean Computer Scientists and Engineers Association of America (KOCSEA) Technical Symposium, Dec 11, 2015
48. “What Do We Mean By $p < 0.05$?”, “Univariate and Multi-variate Analysis”, “Kaplan Meier Curves and Net Classification”, Los Angeles, CA, Trial Design and Analysis Part 2, Clinical Trials Workshop, Society for Cardiovascular Magnetic Resonance (SCMA), Jan 28, 2016
49. “Denoise, Classification, and Quantitative Markers”, Department of Biostatistics Seminar (BIOSTAT 245), UCLA, May 25, 2016.”
50. “Quantitative HRCT scores in IPF and Other Application” Connective Tissue Disease ILD meeting, UCLA, June 22, 2016.
51. “Double Dare” Dallas Texas, Korean Women in Science and Engineering, UKC Aug 12, 2016.
52. “Quantitative Lung Fibrosis Score under Different CT Technical Parameters”, Technical session- Math/Applied Math/Statistics, Dallas Texas, UKC Aug 12, 2016.
53. “Prediction of IPF with the Early Changes in Quantitative Imaging Patterns Using High Resolution Computed Tomography”, Dublin Ireland, International Colloquium on Lung and Airway Fibrosis (ICLAF), Sep 27, 2016.
54. “HRCT Texture Feature Selection Using Particle Swam Optimization in Unbalanced Data” Washington DC, Math Applied Mat, and Statistics section, UKC Aug 11, 2017.
55. “Automatic quantitative fibrosis scores at baseline is a predictor pf progression in patients with IPF”, Milan Italy, IPF: clinical problems, European Respiratory Society (ERS) Sep 11, 2017.
56. “Voxel-wise lung pattern transition scores on HRCT images and their association with symptoms in patients with idiopathic pulmonary fibrosis” Milan Italy, IPF: clinical problems, ERS Sep 11, 2017.
57. “Computer Assisted Diagnostic of Interstitial Lung Disease”, Invited speaker, Dubai, Asia Pacific League of Associations for Rheumatology (APLAR 2017), Oct 18, 2017.
58. “The Role of Metrology in Quantitative Imaging”, Educational Course presentation (RC825A), Chicago IL, RSNA 2017, Dec 1, 2017.
59. “Application of Denoise on Medical CT images toward Classification in the Patterns of Lung Disease”, Ulsan National Institute Science and Technology (UNIST), Ulsan South Korea, Brain Korea 21 plus Seminar, Dec 6, 2017.
60. “Prediction of IPF within 1-2 years with the Early Changes in Quantitative Imaging Patterns Using High Resolution Computed Tomography”, International Conference on Biomarker Research in Clinical Medicine. Paris France, Feb 21, 2018.
61. “Application: Machine-Learned Quantitative Imaging Biomarkers in Clinical Trials in Subjects with Interstitial Lung Disease”, ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop. Washington DC, Sep 24, 2019.
62. “Quantitative Imaging: Statistical Analysis/Metrology Issues: The Role of Metrology in Quantitative Imaging”, Educational Course presentation (RC425A), Chicago IL, RSNA 2019, Dec 3, 2019.
63. “Machine-Learned Quantitative Imaging Biomarkers in Clinical Trials in Subjects with Interstitial Lung Disease using High Resolution Computed Tomography”, Shippensburg University, Sep 20, 2020.
64. “Machine Learning Domain Adaptive Features for Quantitative COVID-19 Scores in CT”, UKC Dec 17, 2020
65. “Minimal Clinically Important Difference of HRCT Quantitative Lung Fibrosis Scores Anchored by St. George Respiratory Questionnaire and Forced Vital Capacity in Idiopathic Pulmonary Fibrosis, Virtual, ATS 2021, May, 2021
66. “Development and clinical evaluation of Quantitative Lung Fibrosis scores from CT images in clinical trials: idiopathic pulmonary fibrosis and scleroderma with interstitial lung disease”, Virtual, Invited Section on Statistics in Imaging Session # 220155, JSM 2021, Aug 2021.
67. “Kurtosis Of Quantitative Evaluation Of Deep Learning-extracted Features To Classify IPF”, Session #: SSCH05 Chicago IL, RSNA 2021, Nov 30, 2021
68. “Quantitative Evaluation Of Deep Learning-extracted Features for Pulmonary Fibrosis”, Los Angeles CA, UKC 2021, Dec 16, 2021
69. “Minimal Clinically Important Differences in Radiological Changes of QLF Associated with Overall Survival in IPF: Analysis of Phase 2 Studies from FibroGen (Studies 049 and 067)” , May, ATS 2022

70. “Radiomics: Early Identification Of Progression and Treatment Effect Pulmonary Fibrosis”, Stakeholder Summit: A Joint NHLBI-TLF-PFF Workshop Nov 9, 2022
71. “Early Identification Of Progression and Treatment Effect”, Korean ILD study group meeting”, Nov 18 2022
72. “Evaluation of Interstitial Lung Abnormalities by Automatic quantification System”, Seoul Korea, Invited Speaker, Asian Pacific Society of Respiriology, Nov 19 2022
73. “Minimum Clinically Important Difference in the Interstitial Lung Diseases and Research Proposal in Sex Differences”, Seoul Korea, Invited Speaker, Gendered Innovations for Science and Technology Research (GISTER), Nov 22, 2022
74. “Data Science, AI, and Clinical Trials in Medical Imaging Outcomes Using High Resolution Computed Tomography” Yonsei University, Nov 23, 2022, Seoul Korea
75. “A Probabilistic Atlas of Prostate Tumor Occurrence Combining Clinical, Multi-Parametric MRI, and Pathology Data”, RSNA, Nov 30, 2022, Chicago
76. “Early Identification Of Progression and Treatment Effect Pulmonary Fibrosis” Boehringer Ingelheim South Korea, Zoom, Nov, 2023
77. “Imaging Signature Idiopathic Pulmonary Fibrosis (IS- IPF): An Analytic Validation Study Of Two CT Image-based Biomarkers In An Independent Cohort For Predicting Disease Progression In Idiopathic Pulmonary Fibrosis”, May, ATS 2023
78. “Imaging Signature Idiopathic Pulmonary Fibrosis (IS-IPF): An Analytic Validation Study Of Two Ct Image-based Biomarkers In An Independent Cohort For Predicting Disease Progression In Non- IPF Interstitial Lung Diseases”, May, ATS 2023

PUBLICATION/BIBLIOGRAPHY:

RESEARCH PAPERS

RESEARCH PAPERS (PEER REVIEWED)

Primary author is listed first in these publications.

* student or postdoctoral scholar supervised by me at the time.

1. Shah SK, McNitt-Gray MF, De Zoysa KR, Sayre JW, **Kim HJ**, Batra P, Bahtashi A, Brown, K, Greaser LE, Park JM, Roback DK, Wu C, Zaragoza E, Goldin JG, Brown MS, Aberle DR. Solitary pulmonary nodule diagnosis on CT: results of an observer study. Acad Radiol. 2005 Apr;12(4):496-501. (Statistical analysis plan and data analysis)
2. Shah SK, McNitt-Gray MF, Rogers SR, Goldin JG, Suh RD, Sayre JW, Petkovska I, **Kim HJ**, Aberle, DR. Computer-aided diagnosis of the solitary pulmonary nodule. Acad Radiol. 2005 May;12(5):570-5. (Statistical analysis plan and data analysis)
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ABSTRACTS

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80. **Kim HJ**, Brown MS, Sorge K, L Pourzand, Goldin JG. Associations of Clinical Physiological Index from Pulmonary Function Tests with Quantitative Scores from HRCT Image Using Texture Features in Subjects with Idiopathic Pulmonary Fibrosis compared to Scleroderma-related Interstitial Lung Disease. Scientific Poster RSNA 2017.
81. Pace-Soler E, Coy H, Douek ML, Gutierrez AJ, Ruchalski K, Patel MK, Sai V, Margolis D, Ashen-Garry D, **Kim HJ**, Kaplan A, Brown MS, Goldin JG, Raman S. Clear Cell Renal Cell Carcinoma Treated by Antiangiogenic Therapy: Distribution of Metastatic Sites at Baseline and at Time of Progressive Disease Determination. Scientific Oral presentation RSNA 2017.
82. N Emaminejad N, Wahi-Anwar MW, Hoffman JM, Ruchalski K, Goldin JG, Sultan A, **Kim HJ**, Brown MS, McNitt-Gray M. Assessing the Performance of CAD in Lung Nodule Detection from Low-Dose Lung Cancer Screening CT Exams Under Different Combinations of Radiation Dose Level, Slice Thickness, and Reconstruction Kernel. Scientific Oral presentation RSNA 2017.
83. Shi Y, Goldin JG, Wong W, Lai J, Brown MS, **Kim HJ**. HRCT Texture Feature Selection and Imaging Pattern Prediction of IPF using Quantum Particle Swarm Optimization. Scientific Oral presentation RSNA 2017. Featured as "RSNA 2017 Highlights" under Chest Radiology – SSK05-04 in RSNA News.
84. Hoffman JM, **Kim HJ**, Goldin JG, Brown MS, McNitt-Gray MF. Robustness Evaluation of RA-950 Scoring in a Cohort of CT Lung Screening Patients Across a Large Range of CT Acquisition and Reconstruction Conditions. Scientific Oral presentation RSNA 2017.
85. **Kim GJ**, Weigt SS, Brown MS, Sorge K, Pourzand L, Shi Y, Goldin JG. Associations of a Composite Physiologic Index with Quantitative Scores from Texture Features on HRCT images in Subjects with Idiopathic Pulmonary Fibrosis. Pulmonary Fibrosis Foundation Summit 2017. (One of top 10 abstracts).
86. Jeong Seok Lee, **Hyun J. Grace Kim**, Jonathan Goldin, Wonho Lee, You-Jung Ha, Eun Ha Kang, Yun Jong Lee, Yeong Wook Song, Eun Young Lee. Quantitative Radiographic Analysis of Interstitial Lung Disease Associated with Rheumatoid Arthritis. 2017 ACR/ARHP Annual Meeting.

87. **Kim GJ**, Tashkin DP, Brown MS, Volkmann E, L P, Gjertson DW, Lu P, Chong D, Goldin JG. Using Transitional Changes on HRCT to Assess the Impact of Treatment with Cyclophosphamide or Mycophenolate on Systematic Sclerosis-related Interstitial Lung Disease from Scleroderma Lung Study II. Poster presentation on Systematic Sclerosis World Congress 2018 Bordeaux France, Feb 16 2018.
88. Young JR, Qiao J, Orosz I, Nariko A, Franke M, **Kim G**, Whitney P. Gadolinium Deposition in the Pediatric Brain: No Increased Intrinsic T1-Weighted Signal Intensity within the Dentate Nucleus Following the Repeated Administration of the Macrocyclic Agent Gadobutrol" was accepted for a scientific oral presentation at the 2018 ASNR Annual Meeting.
89. Jonathan Goldin, Lynette Keyes-Elstein, Leslie Crofford, Daniel E. Furst, Ellen Goldmuntz, Maureen D. Mayes, Peter McSweeney, Richard Nash, **Hyun J. Grace Kim**, Mathew Brown, Keith Sullivan. Changes in Quantitative Scleroderma Lung CT Measures in Patients Treated with Cyclophosphamide or Transplantation. 2018 ACR/ARHP Annual Meeting
90. Elizabeth R. Volkmann, Donald P. Tashkin, Masataka Kuwana, Ning Li, Julio Charles, Faye N. Hant, Galina S. Bogatkevich, Tanjina Akter, Michael Roth, **Hyun J. Grace Kim**, Jonathan Goldin, Dinesh Khanna, Philip J. Clements, Daniel E. Furst, Robert Elashoff, Rick Silver, Shervin Assassi. Specific Pneumoproteins Predict Progression of Interstitial Lung Disease in Systemic Sclerosis Patients Undergoing Treatment with Immunosuppression. 2018 ACR/ARHP Annual Meeting.
91. **Grace Hyun Kim**, Yu Shi, Weng Kee Wong, Matthew Brown, Pang-Yu Teng, Jonathan Goldin. Prediction of Progression using Quantum Particle Swarm Optimization and its Metrics at Single Time Point HRCT Scan in Subjects with IPF. May 2019 ATS Annual Meeting Dallas Texas.
92. D Khanna, CJF Lin, J Goldin, **G Kim**, M Kuwana, Y Allanore, A Batalov, I Butrimiene, P Carreira, M Matucci-Cerinic, O Distler, D Martinović Kaliterna, CM Mihai, M Mogensen, M Olesińska, JE Pope, G Rimekasten, TS Rodriguez-Reyna, MJ Santos, J van Laar, H Spotswood, J Siegel, A Jahreis, D Furst, CP Denton. Preservation of Lung Function Observed in a Phase 3 Randomized Controlled Trial of Tocilizumab for the Treatment of Early Systemic Sclerosis. May 2019 ATS Annual Meeting Dallas Texas
93. Kathleen Ruchalski, **Grace Hyun Kim**, Denise Aberle, Matthew Brown, Jonathan Goldin. Baseline Quantitative Texture Feature Predict Tumor PD-L1 Status in Advanced Non-Small Cell Lung Cancer. International Cancer Imaging Society, Verona Italy. Oct 2019.
94. **Grace Hyun Kim**, Anna Kim, Nathan Kim, Matthew Brown, Jonathan Goldin. Prevalence of Interstitial Lung Abnormalities and Its Association with Emphysema Scores In A Screening Population Using High Resolution CT Scores. American Thoracic Society, Annual Virtual Meeting, Aug 5- Nov 10, 2020.
95. **Grace Hyun J. Kim**, Wenxi Yu, Hua Zhou, S. Sam Weigt, Jonathan G Goldin. Domain Knowledge-Assisted Automatic Diagnosis of Idiopathic Pulmonary Fibrosis (IPF) Using High Resolution Computed Tomography American Thoracic Society, Annual Virtual Meeting, Aug 5- Nov 10, 2020.
96. Wenxi Yu, Hua Zhou, Youngwon Choi, Jonathan G. Goldin, Pangyu Teng, **Grace Hyun J. Kim**. An Automatic Diagnosis of Idiopathic Pulmonary Fibrosis (IPF) Using Domain Knowledge-Guided Attention Models in HRCT images. SPIE- the international society for optics and photonics, Feb 12-19, 2021. Received a Medical Imaging Cum Laude Award.
97. Title: Jina Yeo, Soon Ho Yoon, Ju Yeon Kim, Jin Mo Koo, Jeong Seok Lee, Eun Young Lee, Lila Pourzand, Jonathan Goldin, Grace Kim, You-Jung Ha Changes in Quantitative Interstitial Lung Disease Scores on High-Resolution CT in Idiopathic Inflammatory Myositis, Annual European Congress of Rheumatology EULAR 2022, Copenhagen, Denmark – 1-4 June 2022

DISSERTATION

1. Applied Math in MS: Risk Assessment Using Weibull Model
2. Biostatistics in PhD: Classification in Thoracic Computed Tomography Image Data