ROOSHEEL PATEL
PhD, MS

New York City Metropolitan Area, USA
roosheel.patel@gmail.com
(832) 459-1879
linkedin.com/in/roosheel-patel

EDUCATION

Icahn School of Medicine at Mount Sinai
New York Metropolitan Area, NY, USA
MS/PhD in Biomedical Sciences
GPA: 3.9/4

Texas A&M University
College Station, TX, USA
BS in Biochemistry - Honors
GPA: 3.7/4, Major GPA: 3.9

CAREER ACCOMPLISHMENTS

- 8+ years of experience across data science and computational biology at Tier 1 academic institutions and digital healthcare companies with 60 to 4,000+ employees and up to $300M-500M+ in annual revenue.
- Executed 50+ independent research projects, collaborated with 10+ Fortune 500 companies and published 30+ manuscripts in high-impact journals (Cell, Nature, BMC Biology). **H-index: 16**
- Mentored 15+ data scientists, research technicians, graduate and postdoctoral researchers in computational biology in the past 3 years
- Raised over $20M in research funding through writing and winning federal NIH research grants (R01, R21, U01, SBIR)

SKILLS

Data science - tidverse, janitor (data wrangling), stats, nlme (statistical modeling), ggplot2, plotly, ComplexHeatmap (data visualization), shiny, DT, flexdashboard (interactive visualization)
Multimodal genomics - DESeq2, edgeR, limma (RNA-seq), Seurat, SingleCellExperiment, Monocle, velocyto (single-cell RNA-seq), GATK, VariantAnnotation, samtools, bedtools, bcftools (genomic analysis), clusterProfiler, GOstats (functional enrichment), WGCNA (gene co-expression networks)*
Clinico-epidemiological data analysis - survival, survminer, cmprsk (survival analysis), Mediana, ClinFun, nparLD (clinical trial analysis), meta, metafor, MAd (meta-analysis)
ML/AI - caret, randomForest, xgboost, ranger (general ML), keras, torch, tensorflow (deep learning), Rtsne, umap, PCAtools (dimensionality reduction)
Pipelines and Workflow Management - Snakemake, Rmarkdown (pipeline management), renv, github (reproducibility)
Image Analysis - ImageJ, cellprofiler
Databases - blast, HPA, cbioportal, GTEX, TCGA, gnomad, 1000 genomes
Full list of package suite can be provided at request

PROFESSIONAL EXPERIENCE

TempusAI
New York City Metropolitan Area, NY, USA
Senior Translational Scientist I Jan 2022 – Present
TempusAI is a global health-tech company ($10B+ funding) specializing in AI-driven precision medicine, partnering with 80+ healthcare companies (pharma/biotech) to enhance patient outcomes through innovative data analytics and

*translational research.*Analyzed with a big-data clinico-genomics database (8M+ patients) to answer incoming research scopes from 20+ pharma/biotech partners

- Independently executed 50+ research scopes across patient indication selection, Phase I consultations, research discovery, CDx device development and drug/asset deriskment
- Interacted with 10+ business units internally weekly to meet company milestones and led to IPO
- Won multiple (3) internal company prizes for data visualizations and generative AI evangelism

Icahn School of Medicine at Mount Sinai (ISMMS)
New York City Metropolitan Area, NY, USA
Doctoral student in Biomedical Sciences Aug 2017 - Jul 2022
(Labs of Brad Rosenberg MD/PhD and Dusan Bogunovic, PhD)
ISMMS is a leading R1 research institution and medical system, supporting over 350+ research labs, 5000+ researchers across 45 institutes (26 faculty members recognized by the National Academy of Medicine/Sciences). Developed a comprehensive skill set in computational biology and data science, ranging from multi-modal data integration and analyses (DNA (whole exome, genome), RNA (bulk, single-cell), flow cytometry, experimental data (cell lines, animal models)).

- Authored 3+ internal github repos to automate common data analytics (monoallelic gene expression (published in Nature 2024), equine/non-model organism scRNA-sequencing, auto-antibody analyses)
- Published over 30+ research publications in a 3 year span, with 4 as the primary author
- Wrote and won 3+ federal grant applications raising over $10M+ for 5+ ongoing and future research programs in less than 3 year tenure.
- Co-mentored by 2 principal investigators and research programs (computational immunology/virology and human genetics) and integrated and shared expertise cross-lab ways (total group size = 21)
- Sat on the graduate school's Steering Committee and discussed academic and social initiatives impacting 500+ graduate and medical trainees
- Routinely presented data to 30-350+ person domestic and global audiences and facilitated research awareness/engagement that led to 10+ internal/external collaborations
- Recipient of the Terry Krulwich Thesis Dissertation Award (1/300+ trainees)

McGovern Medical School at University of Texas-Houston/Texas Medical Center
Houston, TX
Research Technician (Dr. Peter J. Christie Lab) Apr 2015 - Jul 2017
UTH McGovern Medical School

- Performed 10+ lab duties spanning from bacterial cell culture (daily), lab supply stocking/ordering (biweekly), 5+ vendor relationships and lab lunches/activities (monthly)
- Conducted and executed 3+ research projects, culminating publication in Molecular Microbiology (2nd author)
- Won best oral presentation at annual research department retreat in a pool of 40+ graduate and postdoctoral trainees

AWARDS

- 2022 - Terry Krulwich Thesis Dissertation Award (1/50+)
- 2021 - European Veterinary Immunology Workshop (EVIW) - Best Talk (1/300+)
- 2016 - McGovern Medical School Annual Microbiology Retreat - Best Talk (1/50+)
- 2014 - Nancy M. and Brock D. Nelson Scholarship Recipient (1/100+)
- 2014 - Texas A&M Student Research Week - Best Individual Talk (1/300+)

PEER REVIEWED PUBLICATIONS (Google Scholar) (ORCiD)

Patel R.S*., Tomlinson J.E*., Divers T.J., Van de Walle G.R., Rosenberg B.R. (2020), Single cell resolution landscape of equine peripheral blood mononuclear cells reveals diverse cell types including T-bet+ B cells., **BMC Biology** https://doi.org/10.1101/2020.05.05.077362.

Gruber C.*, **Patel R.S.***, Trachman R., Lepow L., Amanat F., Krammer F., Wilson K.M., Onel K., Geanon D., Tuballes. K, Patel M., Mouskas K., Simons N., Barcessat V., Del Valle D., Udondem S., Kang G., Gangadharan S., Ofori-Amanfo G., Rahman A., Kim-Schulze S., Charney A., Gnjatic S., Gelb B., Merad M., Bogunovic D. (2020), Mapping Systemic Inflammation and Antibody Responses in Multisystem Inflammatory Syndrome in Children (MIS-C)., **Cell** https://doi.org/10.1016/j.cell.2020.09.034.

Yemscratch Akalu*, **Patel R.S.***, Taft J.*, Buta S., Martin-Fernandez M., Kaur K., Figueroa D., Goff M., Albrecht R., Lim J., Zhangi L., Garcia-Sastre A., Rosenberg B.R., Bogunovic D. (2020), Broad-spectrum RNA antiviral inspired by ISG15 deficiency. Manuscript in review at **Science Immunology**.

Taft J., Markson M., Legarda D., **Patel R.,** Chan M., Malle L., Richardson A., et al. 2021. “Human TBK1 Deficiency Leads to Autoinflammation Driven by TNF-Induced Cell Death.” **Cell** 184 (17): 4447-4463.e20.

Malle L., **Patel R.S.,** Buta S., Richardson A., Philippot Q., Barcessat V., Taft J., Bastard P., Samuels J., Mircher C., Rebillat A-S., Mailebouis L., Tuballes K., Rosenberg B., Trachtman R., Casanova J.L., Notorangelo L., Gnjatic S., Bush D., Bogunovic D., 2023. “Autoimmunity in Down’s syndrome via cytokines, CD4 T cells, and CD11c+ B cells.”. **Nature** https://doi.org/10.1038/s41586-023-05736-y.

Fstkchyan Y., Torre D., **Patel R.S.,** Ho J., Degrace E.J., Cheon Y. et al. 2022. RNA Catabolism silences euchromatic endogenous retroviruses and suppresses gene birth. Manuscript in revision at **Cell**.

Cohen P., DeGrace E.J., Danzinger O., **Patel R.S.,** Rosenberg B.R. 2022. “Unambigous detection of SARS-CoV-2 subgenomic mRNAs with single cell RNA sequencing”. **bioRxiv.** doi: https://10.1101/2021.11.22.469642.

Danziger O., **Patel R.S.**, DeGrace E.J., Rosen M.R., Rosenberg B.R. 2022. “Inducible CRISPR Activation Screen for Interferon-Stimulated Genes Identifies OAS1 as a SARS-CoV-2 Restriction Factor.” **PLoS Pathogens** 18 (4): e1010464.

Jurczyszak D., Manganaro L., Buta S., Gruber C., Martin-Fernandez M., Taft J., **Patel R.S.,** et al. 2022. “ISG15 Deficiency Restricts HIV-1 Infection. **PLoS Pathogens** 18 (3): e1010405.

Kaji, D.A., Montero A.M., **Patel R.**, Huang A.H. 2021. “Transcriptional Profiling of MESC-Derived Tendon and Fibrocartilage Cell Fate Switch.” **Nature Communications** 12 (1): 4208.

Malle L., Bastard P., Martin-Nalda A., Carpenter T., Bush D., **Patel R.**, Colobran R., et al. 2021. “Atypical Inflammatory Syndrome Triggered by SARS-CoV-2 in Infants with Down Syndrome.” **Journal of Clinical Immunology** 41 (7): 1457–62.

Miorin L., Kehrer T., Sanchez-Aparicio M.T., Zhang K., Cohen P., **Patel R.S.**, Cupic A., Mei M., Makio T., Danzinger O., Moreno del Olmo E., White K.M., Rathnasinghe R., Uccellini M., Gao S., Aydillo-Gomez T., Mena I., Yin X., Krogran N.J., Chanda S.K., Schotsaert M., Wozniak R.W., Ren Y., Rosenberg B.R., Fontoura B.M.A., Garcia-Sastré A.

"SARS-CoV-2 Orf6 Hijacks Nup98 to Block STAT Nuclear Import and Antagonize Interferon Signaling." **Proceedings of the National Academy of Sciences** 117 (45): 28344–54.

Nilsson-Payant, B.E., Uhl S., Grimont A., Doane A.S., Cohen P, **Patel R.S.**, Higgins C.A., et al. 2021. "The NF-KB Transcriptional Footprint Is Essential for SARS-CoV-2 Replication." **Journal of Virology** 95 (23): e0125721.

Rice, A., Verma, M., Shin, A., Zakin, L., Sieling, P., Tanaka, S., Adisetiyo, H., Taft, J., **Patel, R.**, Buta, S., Martin-Fernandez, M., Morimoto, B., Gabitzsch, E., Safrit, J.T., Balint, J., Dinkins, K., Spilman, P., Bogunovic, D., Rabizadeh, S., Niazi, K., Soon-Shiong, P., 2020. A Next Generation Bivalent Human Ad5 COVID-19 Vaccine Delivering Both Spike and Nucleocapsid Antigens Elicits Th1 Dominant CD4+, CD8+ T-cell and Neutralizing Antibody Responses. **Scientific Reports**. 2020.07.29.227595. https://doi.org/10.1101/2020.07.29.227595.

Tanaka S., Olson A., Nelson G., Buzko O., Higashide W., Shin A., Gonzales M., Taft J., **Patel R.,** Buta S. et al. 2021. "A SARS-CoV-2-neutralizing ACE2 decoy shows high affinity for N501Y and L452R variants. **Topics in Antiviral Medicine**; 29(1):137, 2021.

Sieling P., Shin A., Zakin L., Rice A., Verma M., Tanaka S., Adisetyo H., Garban H., Taft J., **Patel R.S**., Buta S., Martin-Fernandez M., Bogunovic D., Morimoto B., Gabitzch E., Safrit J.T., Balint J., Spilman P., Rabizadeh S., Niazi K., Soon-Shiong P. (2020) COVID-19 Convalescent Antibodies and T Cells Recognize Human Cell-Expressed Next Generation hAD5 S-Fusion + N- ETSD Vaccine Antigens. Manuscript in submission at **Science.**

Tomlinson J.E., Wolfisberg R., Fahnøe U., **Patel R.S.**, Trivedi T., Kumar A., Sharma S., et al. 2021. "Pathogenesis, MicroRNA-122 Gene-Regulation, and Protective Immune Responses after Acute Equine Hepacivirus Infection." **Hepatology** 74 (3): 1148–63.

Harman R.M., **Patel R.S.*,** Fan J.C., Park J.E., Rosenberg B.R., and Van de Walle G.R. 2020. "Single-Cell RNA Sequencing of Equine Mesenchymal Stromal Cells from Primary Donor- Matched Tissue Sources Reveals Functional Heterogeneity in Immune Modulation and Cell Motility." **Stem Cell Research & Therapy** 11 (1): 524.

Pacella I., Spinelli F.R., Severa M., Timperi E., Tucci G., Zagaglioni M., Ceccarelli F., Rizzo F., Coccia E.M., **Patel R.S**., Martin-Fernandez M., Bogunovic D., Conti F., Barnaba V., Piconese S. (2020), ISG15 protects human Tregs from interferon alpha-induced contraction in a cell-intrinsic fashion. Manuscript in review at **Clinical&Translational Immunology**.

Gordon, J. E., Costa, T., **Patel, R. S.**, Gonzalez-Rivera, C., Sarkar, M. K., Orlova, E. V., Waksman, G., & Christie, P. J. (2017). Use of chimeric type IV secretion systems to define contributions of outer membrane subassemblies for contact-dependent translocation.(2), 273–293. https://doi.org/10.1111/mmi.13700 **Molecular microbiology**, 105

González-Rivera, C., Khara, P., Awad, D., **Patel, R.**, Li, Y. G., Bogisch, M., & Christie, P. J. (2019). Two pKM101-encoded proteins, the pilus-tip protein TraC and Pep, assemble on the Escherichia coli cell surface as adhesins required for efficient conjugative DNA transfer. (1), 96–117. **Molecular microbiology**, 111. https://doi.org/10.1111/mmi.14141

Patel, R. S., Lessor, L. E., Hernandez, A. C., & Kuty Everett, G. F. (2015). Complete Genome Sequence of Enterotoxigenic Escherichia coli N4-Like Podophage Pollock. **Genome Announcements**, 3

*** denotes co-1st authorship**

PRESENTATIONS

Patel R*, Bogunovic D. Mapping Systemic Inflammation and Antibody Responses in Multisystem Inflammatory Syndrome in Children (MIS-C); 2021 Jan 14; Inborn errors of Immunity NYC conference. Oral Presentation.

Patel R*, Bogunovic D. Monoallelic Gene Expression underlies incomplete penetrance in primary immune disorders. 36th Symposium on Virus-Host Interactions; 2020 Feb 27; NYAM New York, NY. Poster Presentation.

Patel R*, Rosenberg B. High resolution landscape of equine peripheral blood mononuclear cell types by single cell RNA-sequencing. 35th Symposium on Virus-Host Interactions; 2019 Jun 19; NYAM New York, NY. Oral Presentation.

Patel R*, Rosenberg B. High resolution landscape of equine peripheral blood mononuclear cell types by single cell RNA-sequencing. 34th Symposium on Virus-Host Interactions; 2019 Jan 22; NYAM New York, NY. Poster Presentation.

Patel R*, Rosenberg B. Identification of the cellular targets of Theiler's Disease Associated Virus in the horse bone marrow. ISMMS Annual MSBS Student Presentation; 2018 Jun 4; Icahn School of Medicine at Mount Sinai, New York, NY. Oral Presentation.

Patel R*, Christie P. Defining the role of Bam Complex in bacterial conjugation. University of Texas at Health Science Center/McGovern Medical School Annual MMG Retreat; 2017 Mar 21; Houston, TX. Oral Presentation. **1st place award in graduate student division**

Patel R*, Straight P. In vivo transposon mutagenesis of Streptomyces sp. Mg1. Texas A&M University Annual Student Research Week; 2014 Mar 26; College Station. Oral Presentation. **2nd place award in 300 student pool; 1st place individual student presentation**