

# Deepali L. Kundnani

---

I work at the intersection of **biology**, **statistics**, and **computation** with a strong application focus on the field of genomics and epigenomics. I work with **Dr. Francesca Storici** as a Bioinformatics Ph.D. Graduate Research Assistant in the Storici Lab at Georgia Institute of Technology. My goal is to delineate presence of ribonucleotides(constructs of RNA) in human genomic DNA finding correlations with other DNA metabolic activities in both in cancer and non-cancer cell types.

Through my work in The Storici Lab, I have recently co-authored a **paper** and **received US National Science Foundation Conference Award** for a **poster presentation** in RNA Society 2021

Before coming to Georgia Tech, I have been fortunate to work with amazing doctors and scientists at Hanash Lab in **MD Anderson Cancer Center** and have been a part of incredible effort in diagnostics of **Lung Cancer Risk Assessment Biomarkers**.



[Website](#)



[LinkedIn](#)



[Email](#)



[Google Scholar](#)



[GitHub](#)

## Education

---

Ph.D.	<b>Bioinformatics</b> – GPA 4.00/4.00 Georgia Institute of Technology Atlanta, GA – USA	Aug 2019 – Present
M.S.	<b>Molecular Biotechnology</b> – GPA 3.88/4.00 University of Houston – Clear Lake Houston, TX – USA	Aug 2013 – May 2015
B.E.	<b>Biotechnology</b> University of Mumbai Mumbai, India	Aug 2008 – May 2012

## Honors and Awards

---

<b>US National Science Foundation Conference Award</b> Awarded for Poster presented on "The Expression Correlation and Copy Number Alteration(CNA) Prevalence of Human RNASEH2A in cancer supports a role for RNASEH2A in cancer proliferation." The 26th Annual Meeting of the RNA Society - RNA 2021.	2021
<b>Jones NAS Biological Sciences Scholarship</b> Merit based scholarship for students in Biological Sciences department University of Houston, Clear-Lake, TX, USA	2014
<b>Third Prize in National level Technical Paper Presentation</b> Prize awarded for presentation on "Genetic Algorithms" by Institute of Electrical and Electronics Engineers (IEEE) committee University of Mumbai, India	2012

## Academic and Industry Research Projects

---

<b>Studying ribonucleotide incorporation in human non- cancer and cancer cell type</b> <i>Graduate Research Assistant, Storici Lab, Georgia Institute of Technology, USA</i> <ul style="list-style-type: none"><li>➤ Studying ribonucleotide composition and sequence context few bases upstream and downstream from site of incorporation.</li><li>➤ Using mathematical models to filter significant highly incorporated locations (hotspots) on the human genome.</li><li>➤ Mapping ribonucleotides on the human genome with different functional regions and annotations to study functional role/association of ribonucleotide incorporation.</li></ul>	2019-2021
<b>Understanding association of RNASEH2A gene in cancer</b> <i>Graduate Research Assistant, Storici Lab, Georgia Institute of Technology, USA</i> <ul style="list-style-type: none"><li>➤ Expression correlation of RNASEH2A with cancer proliferation and cell cycle markers in large cancer cell lines and tissue datasets.</li><li>➤ Copy number alteration prevalence of RNASEH2A gene in different cancers from The Cancer Genome Atlas (TCGA)-Pan Cancer Dataset.</li></ul>	2020-2021
<b>Discovery and validation of protein biomarkers (Diagnostic/Therapeutic) in cancer</b> <i>Research Assistant, Hanash Lab, M.D. Anderson Cancer Research Center, USA</i> <ul style="list-style-type: none"><li>➤ Utilizing Genomic and expression data to validate proteomic findings in various cancers cell lines.</li><li>➤ Investigating splice variants to find novel antigens in cancer.</li><li>➤ Validation of Protein Biomarker Panel for Early Detection of Lung and Pancreatic Cancer.</li><li>➤ Development of auto-antibody test for Lung and Breast Cancer detection.</li></ul>	2015-2019
<b>Development of Enzyme linked Immuno Assay kits for proteins used in diagnosis</b>	2015

of various diseases.

Lab Technician, Ansh Labs, USA

- Antibody production for novel diagnostic ELISA kits.
- Production of highly sensitive antigens in mammalian cell lines.

**Screening human lung cDNA library from Asthma patients for protein interaction with inducible Nitrous Oxide Synthase**

2014

Independent student, Bazlur Lab, University of Houston – Clear Lake, USA

- Employed a yeast two-hybrid system to detect protein interaction between iNOS (Inducible Nitrous Oxide Synthetase) and human lung cDNA libraries from Asthma patients, followed by sequencing and identification of genes

**Creating and testing vectors for high and efficient production of monoclonal Antibodies in the mammalian cells lines**

2012-2013

Research Assistant, Usha Biotech, India

- Testing of a various proprietary vector (including patented CELL EXPRESS - 100™ system) using eGFP reporter gene on CHO-K1 cell line.

**Assessment of Stem Cell Therapy and Analogous Wound Care Techniques for diabetic foot complications in reference to the standard therapy**

2011-2012

Trainee, S.L.Raheja Hospital, Mumbai, India (B.E. Thesis)

- Track clinical trial from patient inclusion, consent to final day follow up of treatments.
- Built statistical analysis to evaluate therapy/drug effectivity.

## Publications

---

### *Journal Publications*

Marsili, S., Tichon, A., Kundnani, D., & Storici, F. (2021). **Gene co-expression analysis of human mnaeh2a reveals functional networks associated with dna replication, dna damage response, and cell cycle regulation.** *Biology*, 10(3), 221. [🔗](#)

 **PDF**  **REVIEW**

Ostrin, E. J., Bantis, L. E., Wilson, D. O., Patel, N., Wang, R., Kundnani, D., Adams-Haduch, J., Dennison, J. B., Fahrman, J. F., Chiu, H. T., Gazdar, A., Feng, Z., Yuan, J. M., & Hanash, S. M. (2021). **Contribution of a Blood-Based Protein Biomarker Panel to the Classification of Indeterminate Pulmonary Nodules.** *Journal of Thoracic Oncology*, 16(2), 228–236. [🔗](#)

 **IMPACT**

Kobayashi, M., Katayama, H., Irajizad, E., Vykoukal, J. V., Fahrman, J. F., Kundnani, D. L., Yu, C.-Y., Cai, Y., Hsiao, F. C., Yang, W.-L., Lu, Z., Celestino, J., Long, J. P., Do, K.-A., Lu, K. H., Ladd, J. J., Urban, N., Bast Jr., R. C., & Hanash, S. M. (2020). **Proteome Profiling Uncovers an**

**Autoimmune Response Signature That Reflects Ovarian Cancer Pathogenesis.** *Cancers*, 12(2), 485. [Link](#)



Subbalakshmi, A. R., Kundnani, D., Biswas, K., Ghosh, A., Hanash, S. M., Tripathi, S. C., & Jolly, M. K. (2020). **NFATc Acts as a Non-Canonical Phenotypic Stability Factor for a Hybrid Epithelial/Mesenchymal Phenotype.** *Frontiers in Oncology*, 10, 1794. [Link](#)



Capello, M., Fahrmann, J. F., Rios Perez, M. V., Vykoukal, J. V., Irajizad, E., Tripathi, S. C., Roife, D., Bantis, L. E., Kang, Y., Kundnani, D. L., Xu, H., Prakash, L. R., Long, J. P., Katayama, H., Fleury, A., Ferri-Borgogno, S., Baluya, D. L., Dennison, J. B., Aguilar-Bonavides, C., ... Hanash, S. M. (2020). **CES2 Expression in Pancreatic Adenocarcinoma Is Predictive of Response to Irinotecan and Is Associated With Type 2 Diabetes.** *JCO Precision Oncology*, 4, 426–436. [Link](#)



Jia, D., George, J. T., Tripathi, S. C., Kundnani, D. L., Lu, M., Hanash, S. M., Onuchic, J. N., Jolly, M. K., & Levine, H. (2019). **Testing the gene expression classification of the EMT spectrum.** *Physical Biology*, 16(2), 025002. [Link](#)



Capello, M., Vykoukal, J. V., Katayama, H., Bantis, L. E., Wang, H., Kundnani, D. L., Aguilar-Bonavides, C., Aguilar, M., Tripathi, S. C., Dhillon, D. S., Momin, A. A., Peters, H., Katz, M. H., Alvarez, H., Bernard, V., Ferri-Borgogno, S., Brand, R., Adler, D. G., Firpo, M. A., ... Hanash, S. M. (2019). **Exosomes harbor B cell targets in pancreatic adenocarcinoma and exert decoy function against complement-mediated cytotoxicity.** *Nature Communications*, 10(1), 1–13. [Link](#)



Fahrmann, J. F., Bantis, L. E., Capello, M., Scelo, G., Dennison, J. B., Patel, N., Murage, E., Vykoukal, J., Kundnani, D. L., Foretova, L., Fabianova, E., Holcatova, I., Janout, V., Feng, Z., Yip-Schneider, M., Zhang, J., Brand, R., Taguchi, A., Maitra, A., ... Hanash, S. (2019). **A Plasma-Derived Protein-Metabolite Multiplexed Panel for Early-Stage Pancreatic Cancer.** *JNCI: Journal of the National Cancer Institute*, 111(4), 372–379. [Link](#)



Guida, F., Sun, N., Bantis, L. E., Muller, D. C., Li, P., Taguchi, A., Dhillon, D., Kundnani, D. L., Patel, N. J., Yan, Q., Byrnes, G., Moons, K. G. M., Tjønneland, A., Panico, S., Agnoli, C., Vineis, P., Palli, D., Bueno-De-Mesquita, B., Peeters, P. H., ... Hanash, S. M. (2018). **Assessment of Lung Cancer Risk on the Basis of a Biomarker Panel of Circulating Proteins.** *JAMA Oncology*, 4(10), 182078. [Link](#)



Capello, M., Bantis, L. E., Scelo, G., Zhao, Y., Li, P., Dhillon, D. S., Patel, N. J., Kundnani, D. L., Wang, H., Abbruzzese, J. L., Maitra, A., Tempero, M. A., Brand, R., Brennan, L., Feng, E., Taguchi, I., Janout, V., Firpo, M. A., Mulvihill, S. J., ... Hanash, S. M. (2017). **Sequential Validation of Blood-**

**Based Protein Biomarker Candidates for Early-Stage Pancreatic Cancer.** *Journal of the National Cancer Institute*, 109(4), djw266. 



**PDF**  **NEWS**

## *Conference Papers*

Makoto Kobayashi, Katayama, H., Xu, H., Vykoukal, J. V, Fahrman, J. F., Kundnani, D. L., Wang, H., Celestino, J., Liu, J., Lu, K. H., & Hanash, S. M. (2019). **In-depth proteomics profiling of ovarian cancer ascites-derived tumor cells for therapeutic target discovery.** , JPrOS JES 2019.





**PDF**

## *Papers in preparation*

Kundnani D. L., Storici F. 2021 **.R pipeline to visualize gene associations using clustering correlation analysis with different transformations for sequencing data**, *Software Impacts*

## *Web Posts*

Kundnani, D., Thomas, S., Ulukaya, G. B., Kesar, D., Feldman, J., & Duan, J. (Nicole). (2019). **Differential gene expression in lung cancer cell lines between wildtype and mutant/variant p53.** *Biology Computes / Genomics and Bioinformatics at Georgia Tech.* 

Kesar, D., Kundnani, D., Feldman, J., Thomas, S. T., Ulukaya, G. B., & Duan, J. (Nicole). (2019). **Exome Analysis of Utah Resident with Northern and Western European Ancestry.** *Biology Computes / Genomics and Bioinformatics at Georgia Tech.* 

## **Presentations and Lectures**

---

### *Poster Presentation*

Kundnani, D. L., Marsili, S., Tichon, A., & Storici, F. (2021). Expression Correlation and Copy Number Alteration(CNA) Prevalence of Human RNASEH2A in cancer supports a role for RNASEH2A in cancer proliferation. The 26th Annual Meeting of the RNA Society - RNA 2021.



**PDF**  **Received Conference AWARD**

### *Lectures*

**Data Preprocessing and Dimensionality reduction in Biomedical and Clinical settings,** Biostatistics, Georgia Institute of Technology, 2020

**DNA sequencing and Phylogenetic Analysis**, Genetics Lab, Georgia Institute of Technology, 2019

**Time Management**, Thadomal Shahani Engineering College, 2010

### *Technical Paper Presentation*

**Genetic Algorithms**, National Technical Paper Presentation, Mumbai, 2011 🏆 **Won Third Prize**

### *Workshops*

**Water Purification Systems**, BIOZEAL, 2009.

## Teaching Experience

Course	Position/Title	Institute	Semester
Biostatistics (APPH-6225)	Teaching Assistant	Georgia Institute of Technology	Summer 2020
Scientific Foundations of Health (APPH 1040)	Teaching Assistant	Georgia Institute of Technology	Spring 2020
Genetics Lab (BIOL-2345)	Teaching Assistant	Georgia Institute of Technology	Fall 2019
Applied Biotechnology (BIOT 5031)	Teaching Assistant	University of Houston – Clear Lake	Fall 2014

## Professional Training

<b>ISO 9001:2008 Rules and Regulations</b> Ansh Labs, USA	2015
<b>Mammalian Cell Culture and Molecular Cloning Techniques</b> Usha Biotech, India	2012
<b>Applications of Immunology in Health and Medicine</b> Haffkine Institute, India	2011
<b>Workings of Clinical Research</b> , Institute of Clinical Research, India	2010

## Professional Affiliations

---

<b>RNA Society</b> , member	2021-Present
<b>American Association for the Advancement of Science (AAAS)</b> , member	2020-Present
<b>International Society for Computational Biology (ISMB)</b> , member	2019-Present
<b>Association for Women in Science, Gulf Coast Houston (AWIS-GCH)</b> , member	2014-2019
<b>Institute of Electrical and Electronics Engineers – Engineering in Medicine &amp; Biology Society(IEEE-EMBS)</b> , member	2009-2010

## Professional Service

---

Member of Georgia Tech <b>Bioinformatics T-shirt committee</b>	2021
Assisted in Storici Lab's <b>Grant Writing</b>	2021
<b>Reviewed articles:</b>	2019 - Present
<ul style="list-style-type: none"><li>➤ Gombolay, A.L., Storici, F. Mapping ribonucleotides embedded in genomic DNA to single-nucleotide resolution using Ribose-Map. Nat Protoc (2021). <a href="#">Link</a></li><li>➤ El-Sayed, W. M. M., Gombolay, A. L., Xu, P., Yang, T., Jeon, Y., Balachander, S., Newnam, G., Tao, S., Bowen, N. E., Bruna, T., Borodovsky, M., Schinazi, R. F., Kim, B., Chen, Y., &amp; Storici, F. (2021). Disproportionate presence of adenosine in mitochondrial and chloroplast DNA of Chlamydomonas reinhardtii. IScience, 24(1), 102005. <a href="#">Link</a></li></ul>	

## Community Service

---

<b>ASHA for Education, Fundraising</b> 10K and half marathon Runner, Atlanta, USA	2020-Present
<b>National Service Scheme, Blood Donation Camps</b> Volunteer, Mumbai, India	2009-2011

## Skills

---

**Programming:** R Bioconductor, Python, Bash, MATLAB, MySQL, C++,HTML, Markdown

**Applications:** SPSS, GraphPad prism, Excel, Tableau, Mendeley, AutoCAD, Adobe Illustrator

**Platforms and Environments:** Linux, Windows OS, Visual Studio Code, Sublime, Jupyter and Google Colab

**Spoken Languages:** English, Hindi, Sanskrit

## Other

---

**Citizenship:** Indian