# Shoujun Gu, Ph.D

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## Technical Skills

- *Programing Language:*
  Python: Numpy, Pandas, Matplotlib, Seaborn, Scikit-learn, Keras
  R

- *Database:*
  MySQL, MongoDB

- *Webpage:*
  Javascript: D3js, Plotly, Leaflet
  HTML: Bootstrap

- *Next Generation Sequencing:*
  Quality Control: FastQC, Trimmomatic
  Sequence Alignment: HISAT2, BWA
  DE Tools: DESeq, EdgeR, maSigPro

## Data Analytics Projects

- *The Cancer Genome Atlas (TCGA) data mining and analysis project*
  The manuscript of this project entitled '*A Pan-Cancer Atlas of Genomic, Epigenomic and Transcriptomic Alterations in the TGF-β Pathway*', is under reviewing.

- *Build model to predict impact factor range based on the abstract of a research manuscript*
  Details available at: *https://github.com/shoujungu/Impact_Factor_Pred*
  Sample app available at: *https://if-pred.herokuapp.com*

- *Interactive visualization of US healthcare providers database*
  Details available at: *https://github.com/shoujungu/US_Healthcare_Providers*
  Sample app available at: *http://hcproviders.herokuapp.com/*

- *Data mining and analysis on all healthcare publications (Year: 2017) in PubMed database*
  Details available at: *https://github.com/shoujungu/2017_Pubmed_Analysis*

## Education

**The George Washington University, Washington, DC** Oct 2017 – Apr 2018

*Data Analytics Boot Camp*

An intensive 24-week long boot camp dedicated to Data Mining and Analytics Skills on a variety of real-world problems.

**UT Health Science Center at San Antonio** Aug 2005 – May 2012
*Ph.D. Department of Biochemistry*

Achievements:
- Oral presentation in American Society for Bone and Mineral Research 2008 Annual Meeting;
- Discovered that the Twist1 inhibits Sox9 transactivation through protein-protein interaction between Twist1 C-terminal domain and Sox9 DNA binding domain, which results in negative regulation of chondrogenesis [1].

## Working Experience

**The George Washington University, Washington, DC** Jan 2018 –
*Research Scientist*
Data mining on various biological databases and data analysis on next-generation sequencing results.

**The George Washington University, Washington, DC** Oct 2015 – Jan 2018
*Postdoctoral Researcher*
Data mining on various biological databases and data analysis on next-generation sequencing results.

*Achievements:*
- Discovered an aberrant TGF-beta/CEA regulated pathway in colon adenomas by using both whole genomic sequencing and whole transcriptome sequencing methods [2];
- Discovered that Vitamin D promotes liver tumor progression in TGF-beta deficient environment by using both in vivo mouse model and bioinformatics tools [3];
- Published a review article entitled "Alcohol, stem cells and cancer" [4];
- TCGA data mining and analyzing of Pan-Cancer Atlas in the TGF-beta signaling (under review).

**National Institutes of Health, Bethesda, MD** Oct 2012 – Sept 2015
*Visiting Fellow*
Molecular and cellular biology research on the regulation of planar cell polarity.

*Achievements:*
- Discovered that Wnt5a-induced Vangl2 phosphorylation is a key step for planar cell polarity (PCP) signaling initiation and establishment by showing phosphorylated Vangl2 exhibits altered interaction with other PCP proteins and forms self-aggregation;
- Generated myc-Prickle1 knock-in mice by using CRISPR/Cas9 genome editing technique;
- Discovered that Casein Kinase 1 ε/δ conditional knockout mice exhibit significantly shorted long bones and delayed limb development.

## Publications


1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3375531/
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4839765/
3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4960540/
4. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5724803/