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From Big Data to Bedside (BD2B):
Translating genomic big data to better clinical care through artificial intelligence

https://scholar.google.com/citations?hl=en&user=GJvfDrgAAAAJ

Address key questions of AI in medicine

- Causality
- Pattern recognition
  - Deep learning
  - Active learning
- Decision theory

Research Themes

- Cancer Pathway Discovery
- Decision support system for personalized medicine
- Machine learning
- Deep learning
- Single-cell omics
- Text mining and knowledge representation

Current grant support as PI:
R01 LM012011

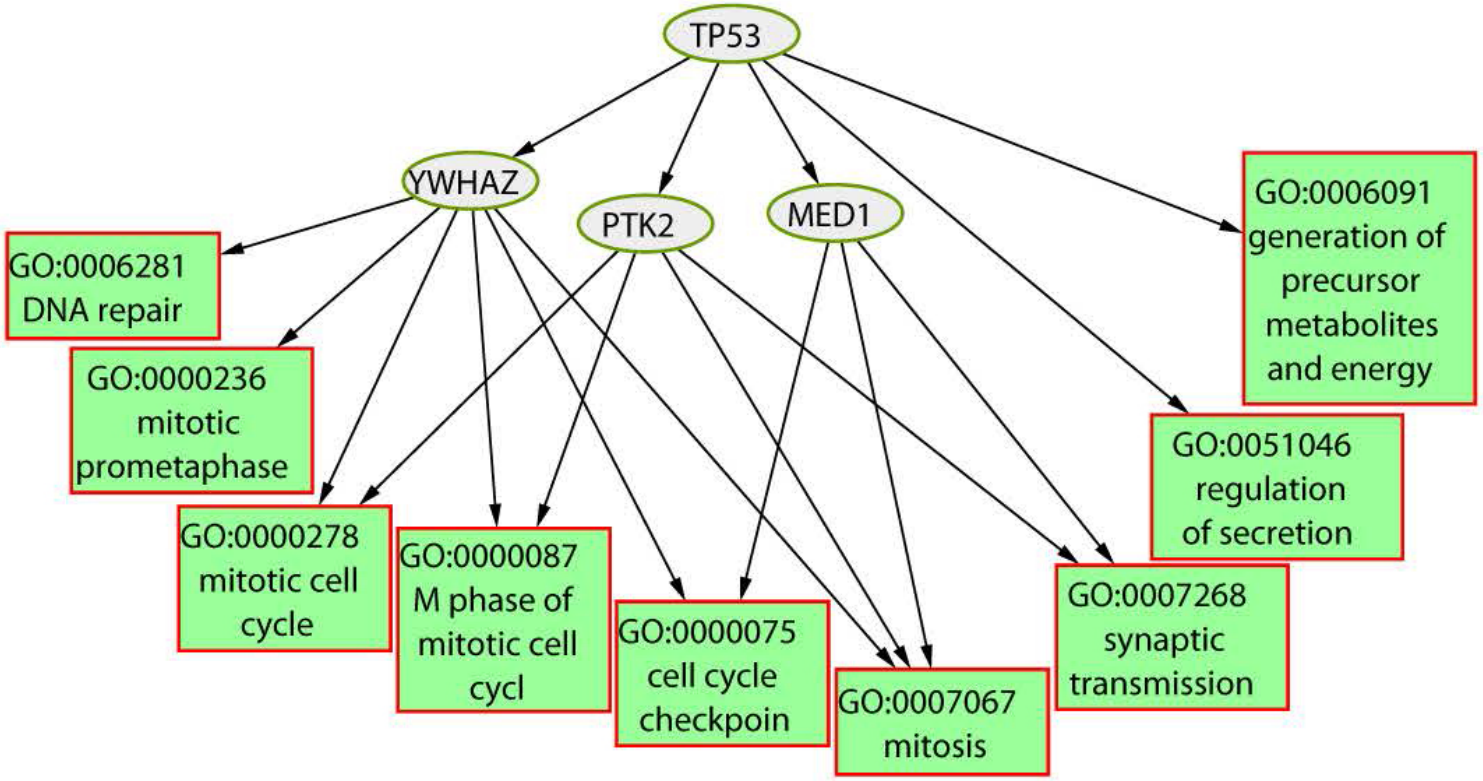
Collaborative funding
U54HG008540-02
R01 GM100387
1U01HL112707

Integrated Systems and Technologies

Cancer Research

Signal-Oriented Pathway Analyses Reveal a Signaling Complex as a Synthetic Lethal Target for p53 Mutations

Songjian Lu[1,2], Chunhui Cai[1,2], Gonghong Yan[3,4,5], Zhuan Zhou[3,6], Yong Wan[3,6], Vicky Chen[1,2], Lujia Chen[1,2], Gregory F. Cooper[1,2], Lina M. Obeid[7], Yusuf A. Hannun[7], Adrian V. Lee[2,3,4,5], and Xinghua Lu[1,2]



A therapeutic strategy that potentially can benefit tens millions of cancer patients.

My Moonshot
DeepRx: AI-driven Precision Oncology

Integrating multi-omics data (genomic, transcriptomic, and pharmacogenomics)

Advanced AI methodologies: Deep learning, tumor-specific Bayesian causal networks, …

Infer the **activation states** of **cancer pathways**

Predict drug sensitivity based on the **activation states** of
- Drug-targeted pathway
- Circumventing pathways