

# Tumor Cell Biology Laboratory

Department of Biochemistry, School of Life Sciences, Central University of Rajasthan



## Prof. Chandi C. Mandal

[2013 to Present at Central University of Rajasthan]

Ph.D. IIT Kharagpur; M.Sc. Biochemistry, Calcutta University  
Post Doc. University of Texas Health Science Center at San Antonio, USA



### Present Researchers

- Ms. Sweta H. Makwana
- Mr. Manas K. Mahapatra
- Ms. Shivani Bansal
- Ms. Jyoti Poswal
- Ms. Monika Kumari
- Mr. Sudip Ghosh

### Previous Researchers

- Dr. Ankit Sharma
- Dr. Tanu Sharma
- Dr. Shreetama Banerjee
- Dr. Sneha Soni
- Dr. Pooja Yadav
- Dr. Kaushik Chowdhury

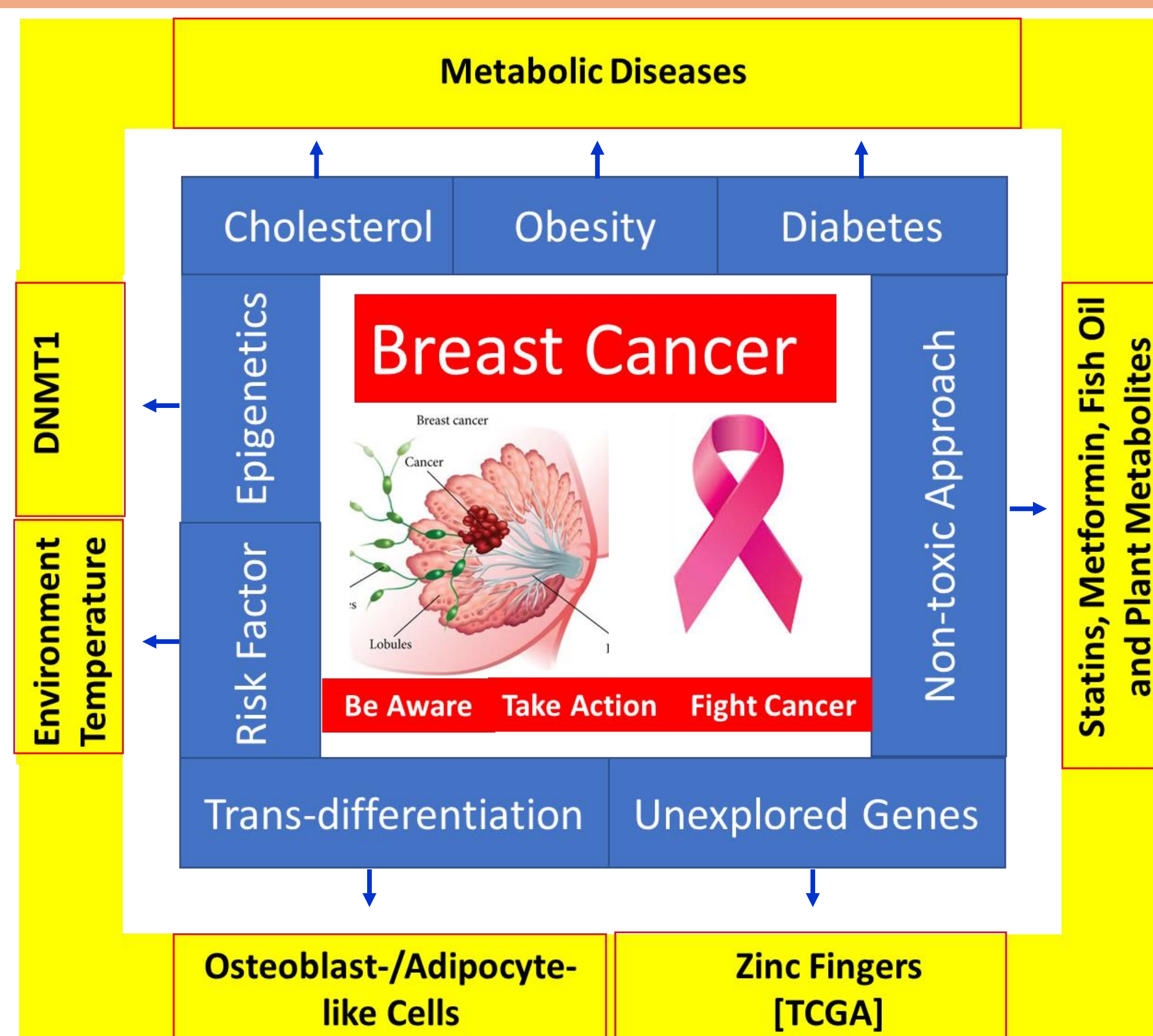
Fellow of Royal Society of Biology (UK)

Top 2% Scientists (Plos Biology)  
[ 2021, 2023-2025]

### Tumor Cell Biology Laboratory:

This laboratory, under the leadership of **Prof. Chandi C. Mandal**, aims at understanding molecular mechanisms of dysregulated gene expressions and cellular signaling networks associated with debilitating cancer diseases, by carrying out cell-based experiments, clinical cancer tissues, animal study and database analysis. Exploring the impact of various metabolic disorders (e.g., diabetes, obesity and hypercholesterolemia) and extrinsic risk factor (e.g., cold exposure) influence on the peculiar trans-differentiation property of epithelial breast cancer cells into osteoblast and adipocyte-like cells is a major focus. Committed to translational relevance, we prioritize non-toxic therapeutic candidates capable of disrupting oncogenic signaling by directly modulating gene targets. The team also examines whether cholesterol-lowering statins, omega-3 fatty acids, and the anti-diabetic drug metformin can be combined with other anti-cancer agents to improve therapeutic efficacy.

### Research Focus



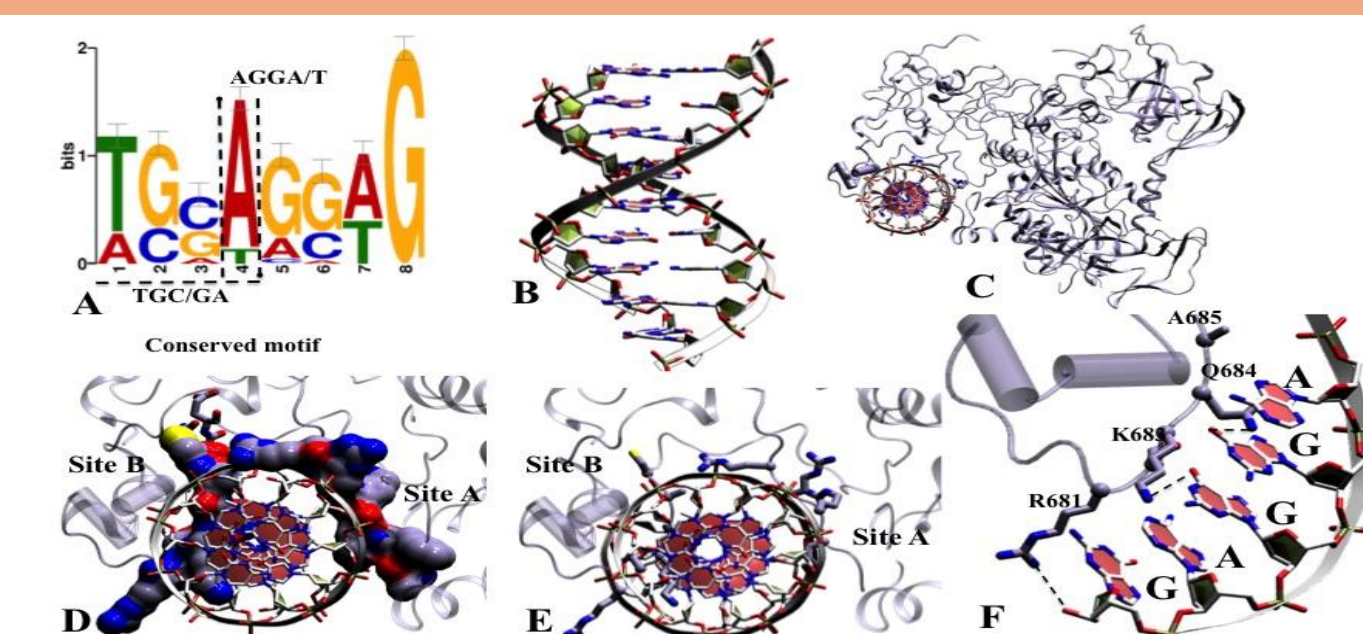
### Current Objectives

- To identify unexplored genes as potent biomarkers and therapeutic targets.
- To address the underlying molecular mechanism for metabolic diseases-associated cancer growth and metastasis.
- To unveil the relationship of adipocytes and osteoblast-like cells with breast cancer cells and its impact on tumor progression.
- Identification of bioactive secondary metabolites for prevention of cancer metastasis.

### Novel Findings: Since 2013 at CURAJ

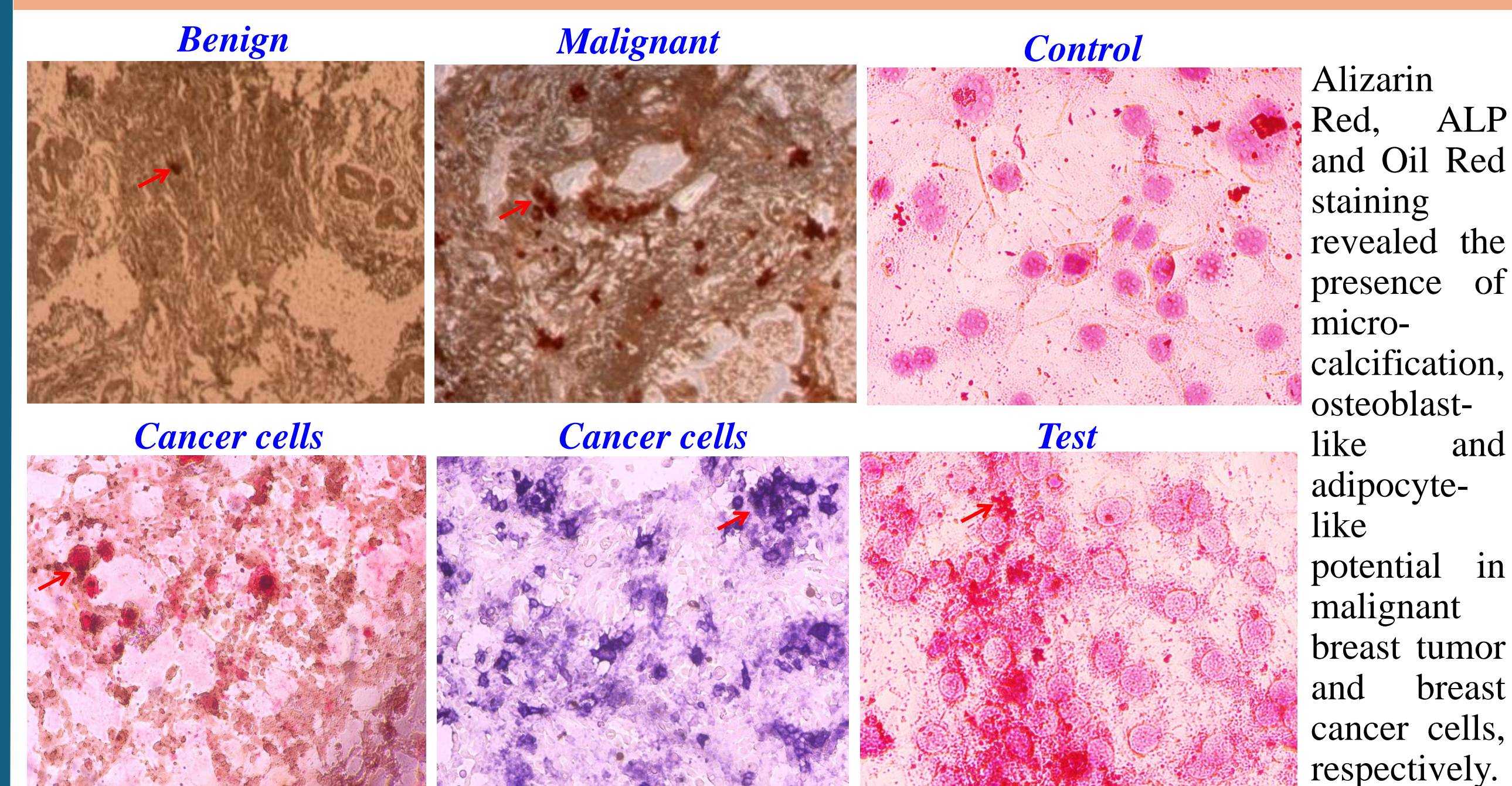
- ❖ Cold temperature as a cancer risk factor.  
[Tumor Biology 2015, 2016, 2017; Journal of Thermal Biology 2020 & 2020]
- ❖ A subpopulation of breast cancer cells govern osteoblast-like and adipocyte-like property.  
[Nutrition & Cancer 2020; Journal of Biochemical & Molecular Toxicology 2023; Biochemical & Biophysical Research Communications 2023]
- ❖ Cold induced *ZNF726* and *TRIM26* act as oncogene in breast cancer.  
[Journal of Cellular Biochemistry 2023 & 2024]
- ❖ Metabolic genes *PHKA1* and *PLPP4* act as oncogenes by modulating glucose and lipid reprogramming.  
[BBA Molecular Cell research 2025; BBA Molecular and cell Biology of Lipids 2025]
- ❖ Covid-19 may hasten during winter.  
[Public Health 2020 & 2022; Scientific Reports 2022]

### Cancer and Epigenetics

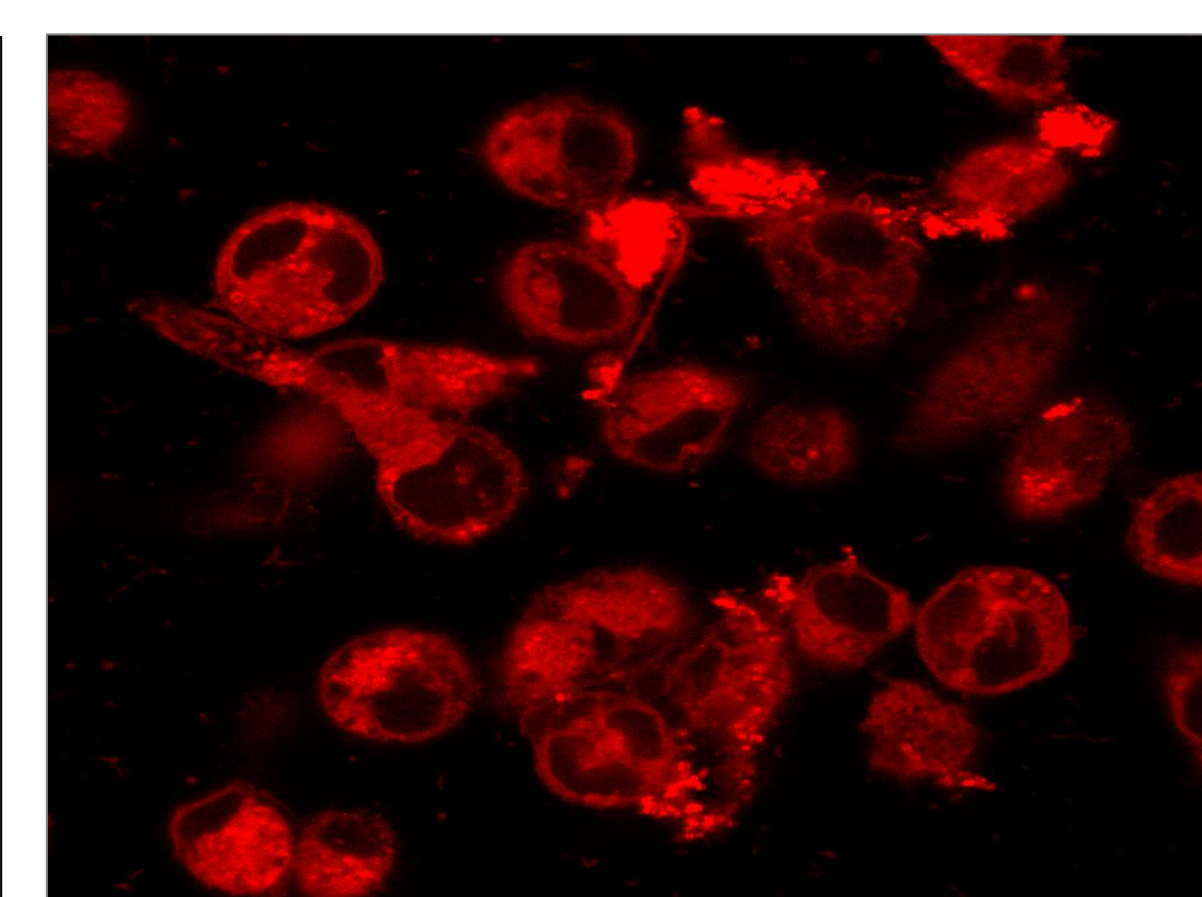
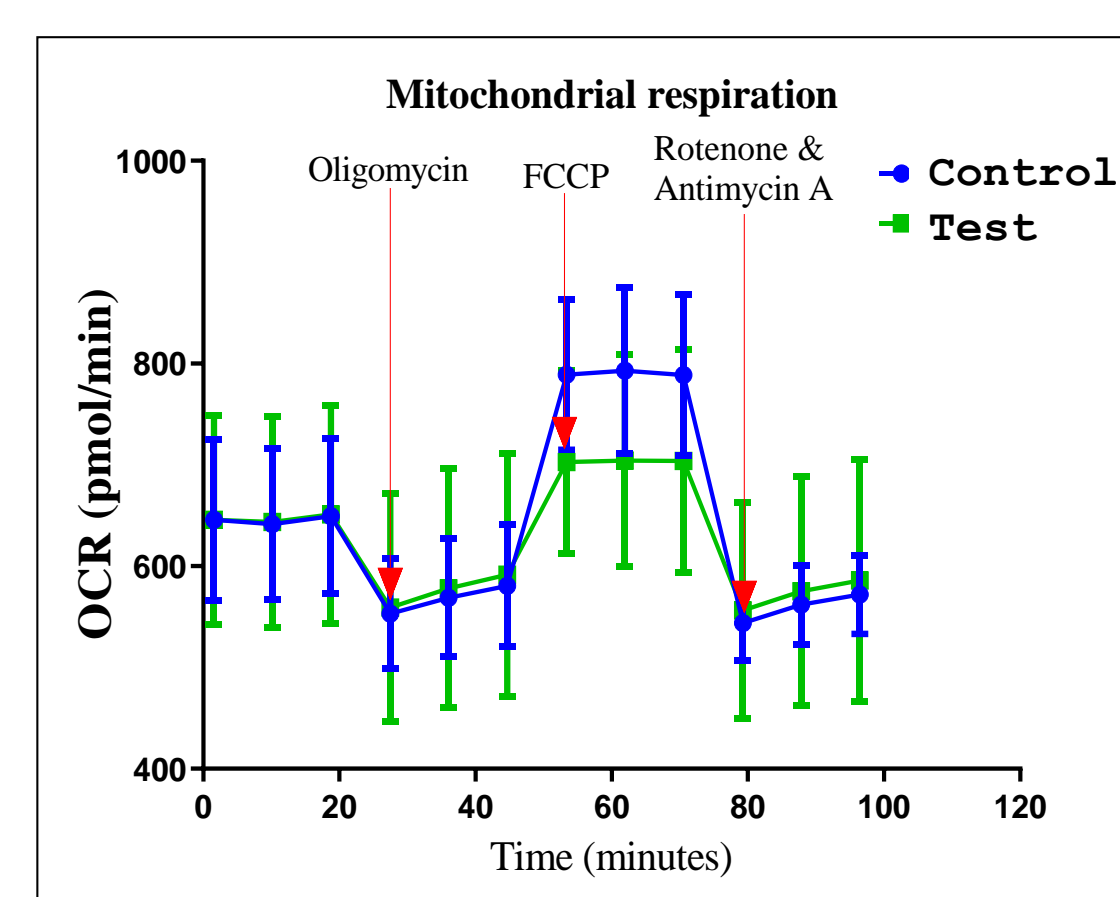


Amino acids having CG nucleotides in their codons are the most mutation prone residues and the presence of a consensus motif 'T/AGC/GAGGA/TG' along with CG might be a signature in the mutation-prone zones.

### Cancer cells and Trans-differentiation

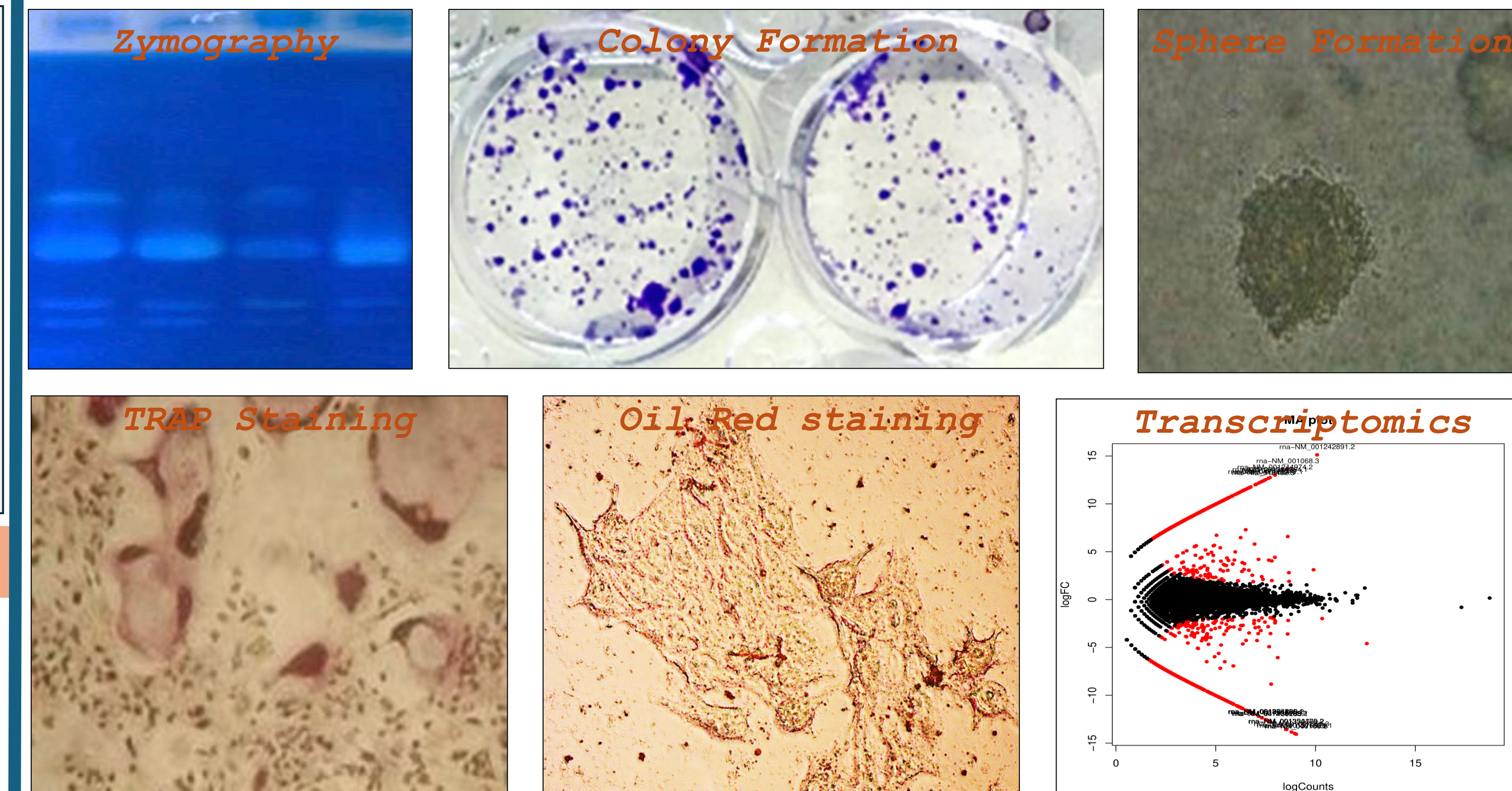


### Lipid metabolism: Metabolic disease-associated cancer

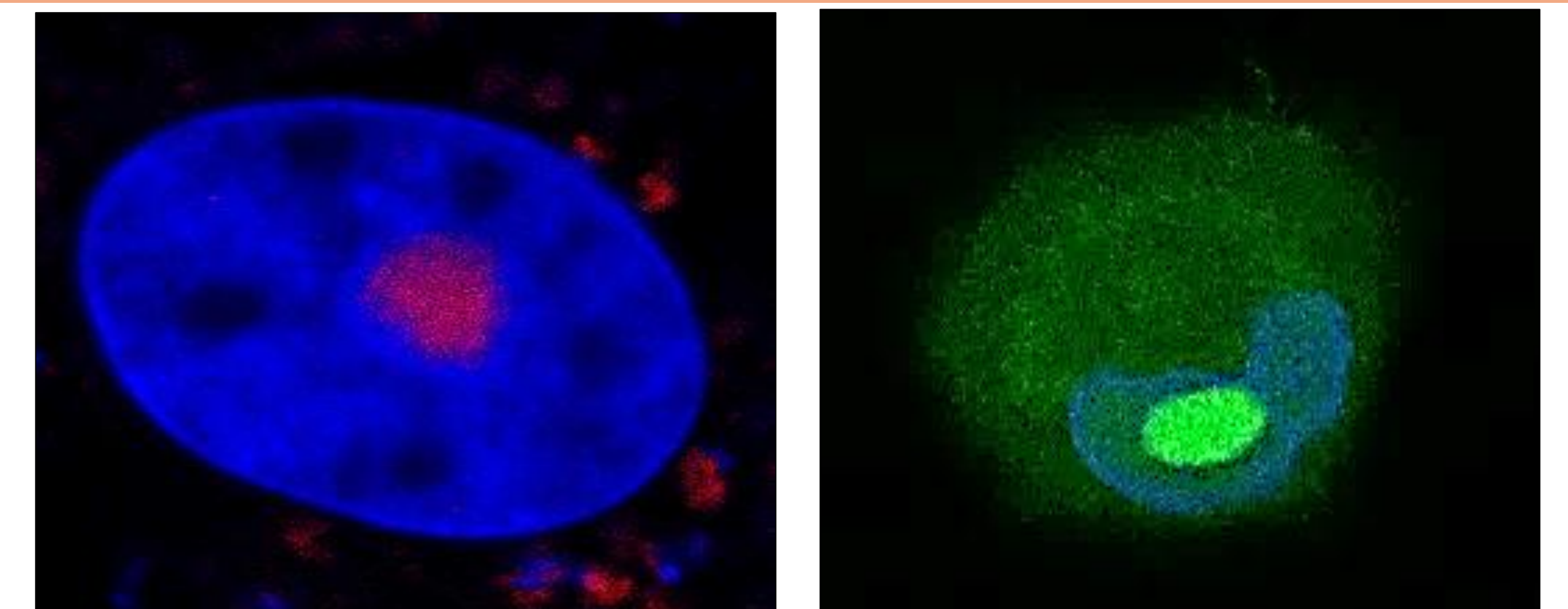


Metabolic disease links with mitochondrial activity and lipid reprogramming

### Experiments in Laboratory



### Immunocytochemistry



### Research Activities



### Contact

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### Funding support



### Details & Update

