

Biorepository: An Important Resource for Translational Cervical Cancer Research

Santu Kumar Saha^{1#Δ}, Sweta Sharma Saha^{1#Δ}, Arup Kumar Pattanayak¹, Sumana Mallick^{1\$}, Siddikuzzaman¹, Chandan Mandal¹, Shrabanti Sarkar Ghosh¹, Sonia Mathai¹, Arindam Basu¹, Jaydip Bhaumik¹, Mammen Chandy¹, Asima Mukhopadhyay^{1*}

¹ Tata Medical Center, 14 MAR, Rajarhat, Kolkata, India

Present address: Northern Institute for Cancer Research, Paul O'Gorman Building, Medical School, Framlington Place, Newcastle University, Newcastle upon Tyne NE2 4HH, UK

Δ Contributed equally

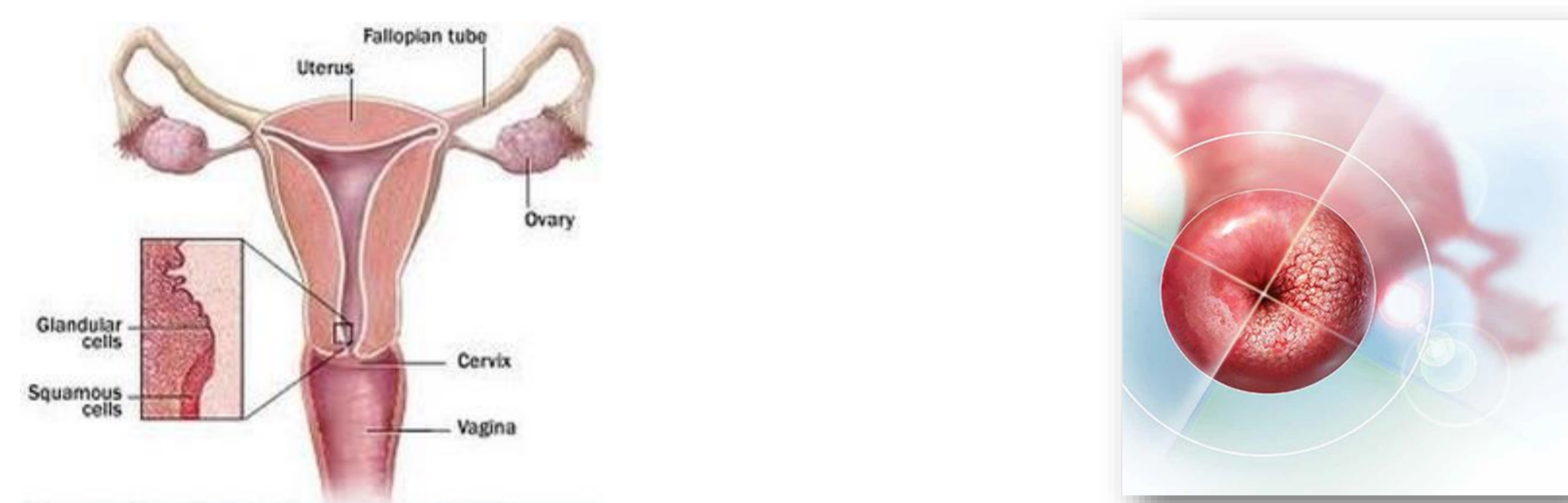
\$ Present address: National Institute of Biomedical Genomics, Kalyani, India

* Correspondence: Asima Mukhopadhyay. Tata Medical Center and Tata Translational Cancer Research Center, 14 MAR, Rajarhat, Kolkata, India. Electronic address: asima7@yahoo.co.in



Introduction

- Cervical cancer is the third most frequent malignancy among women worldwide with ~526,000 new cases reported in 2015
- Around 68,000 women dying each year contributing to ~25% of the total global mortality
- In low and middle income countries like India where screening and HPV vaccination have not been implemented widely the situation is worst.
- Vaccination program available in only 51 countries
- 20% of HPV genotypes not covered by current vaccines (?9-valent)
- High-risk HPV subtypes are an enabling factor in cervical cancer.



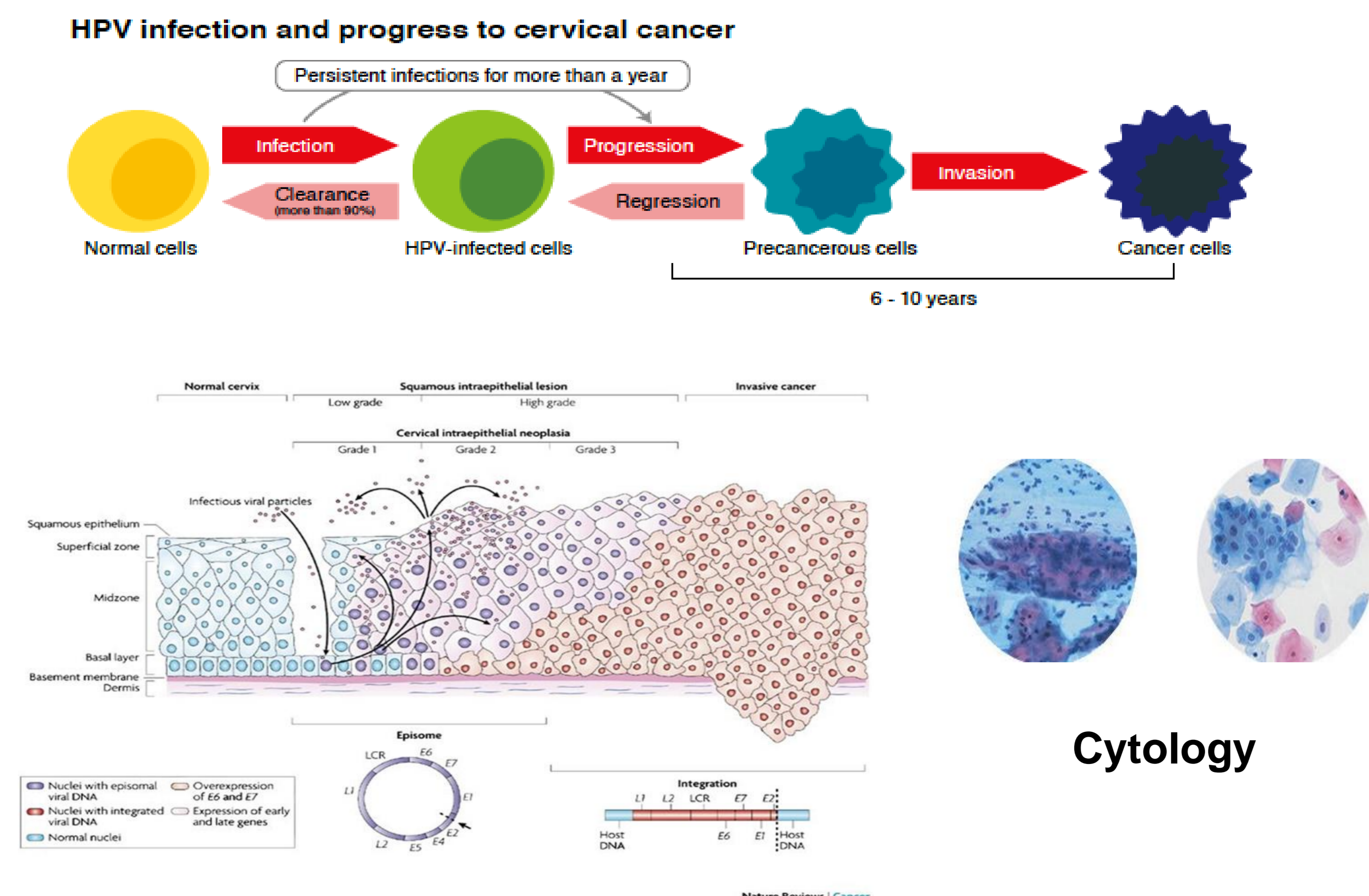
Histology

- Regular cervical screening for pre-invasive disease can save lives
- Nonavalent vaccine on the horizon: 6/11/16/18/31/33/45/52/58

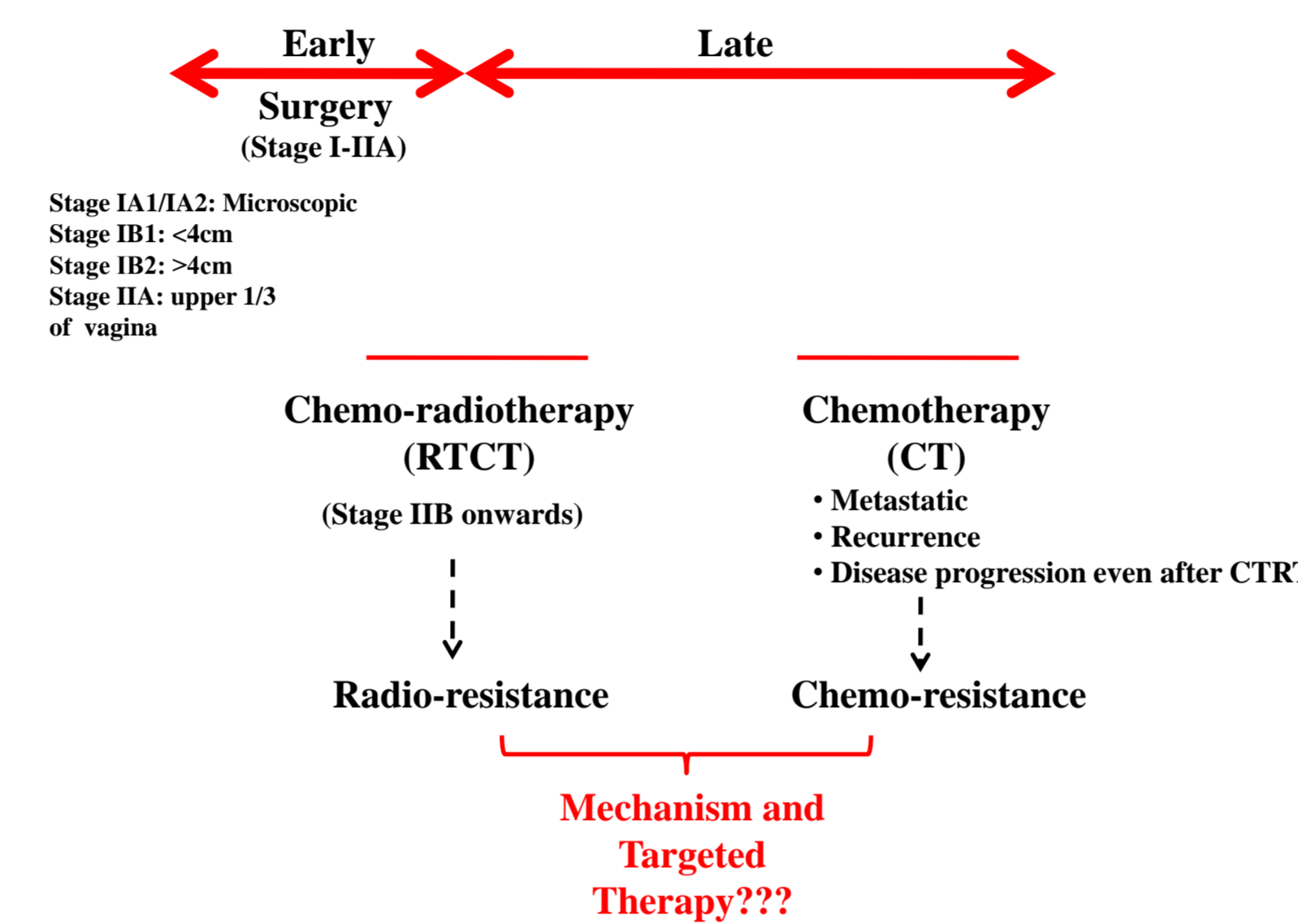


Prevention and Screening

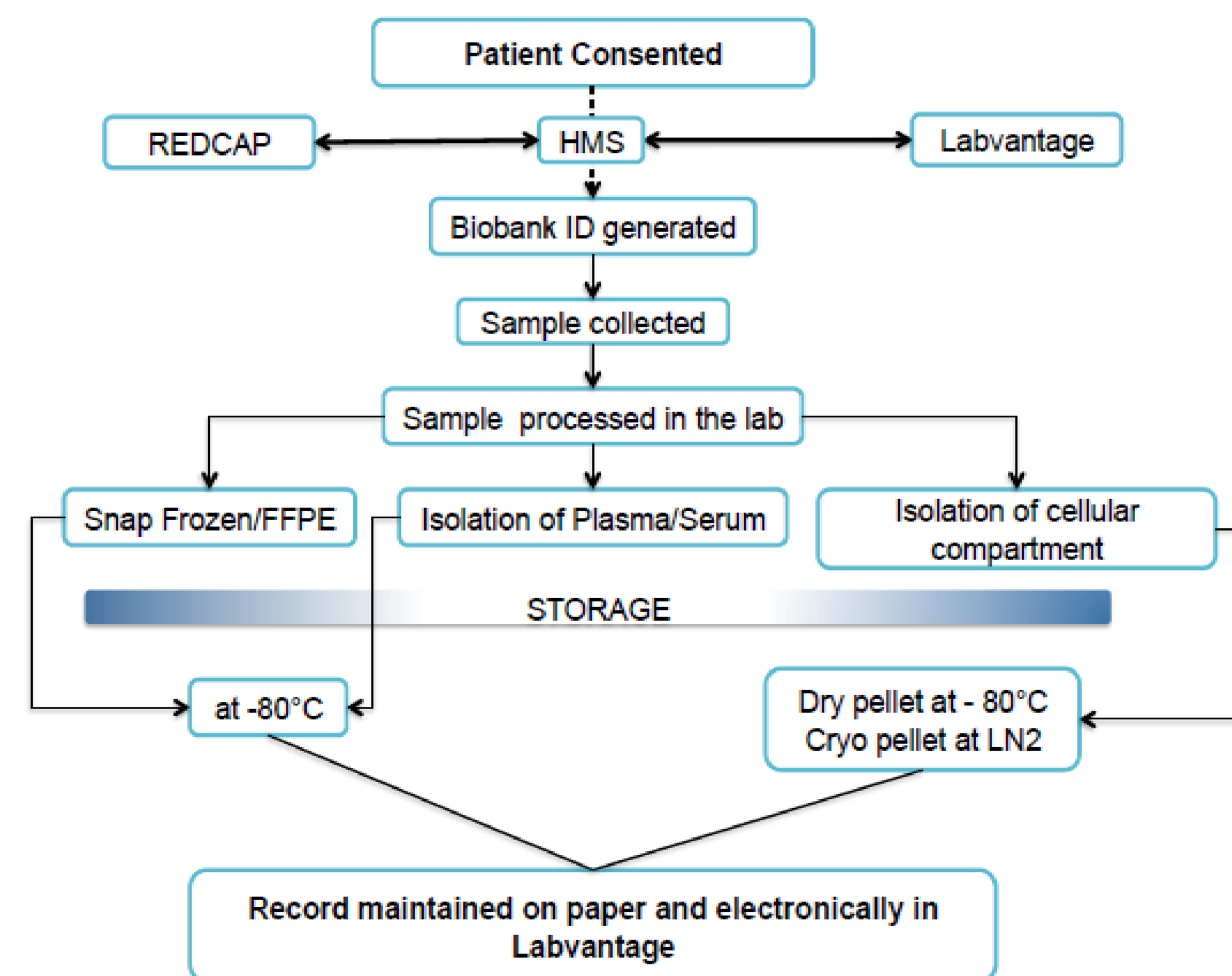
Molecular events of disease Progression and Detection



Different Stages and Mode of Treatment Accordingly



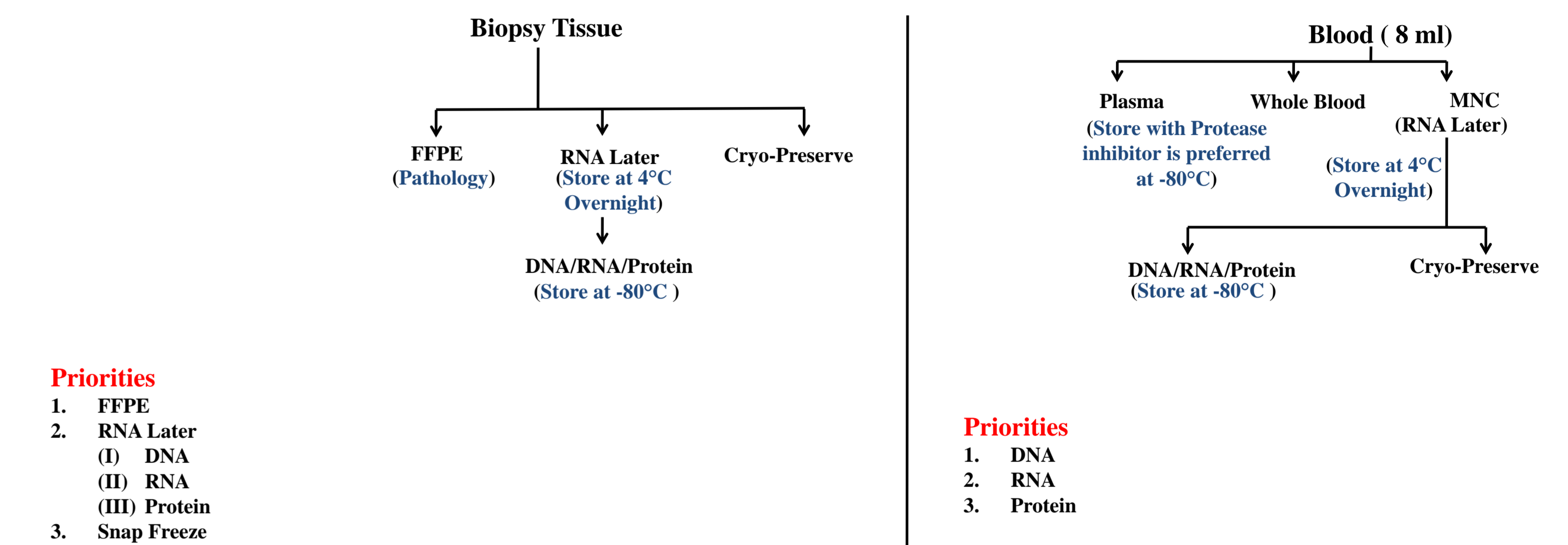
Schematic presentation of Biobank Workflow



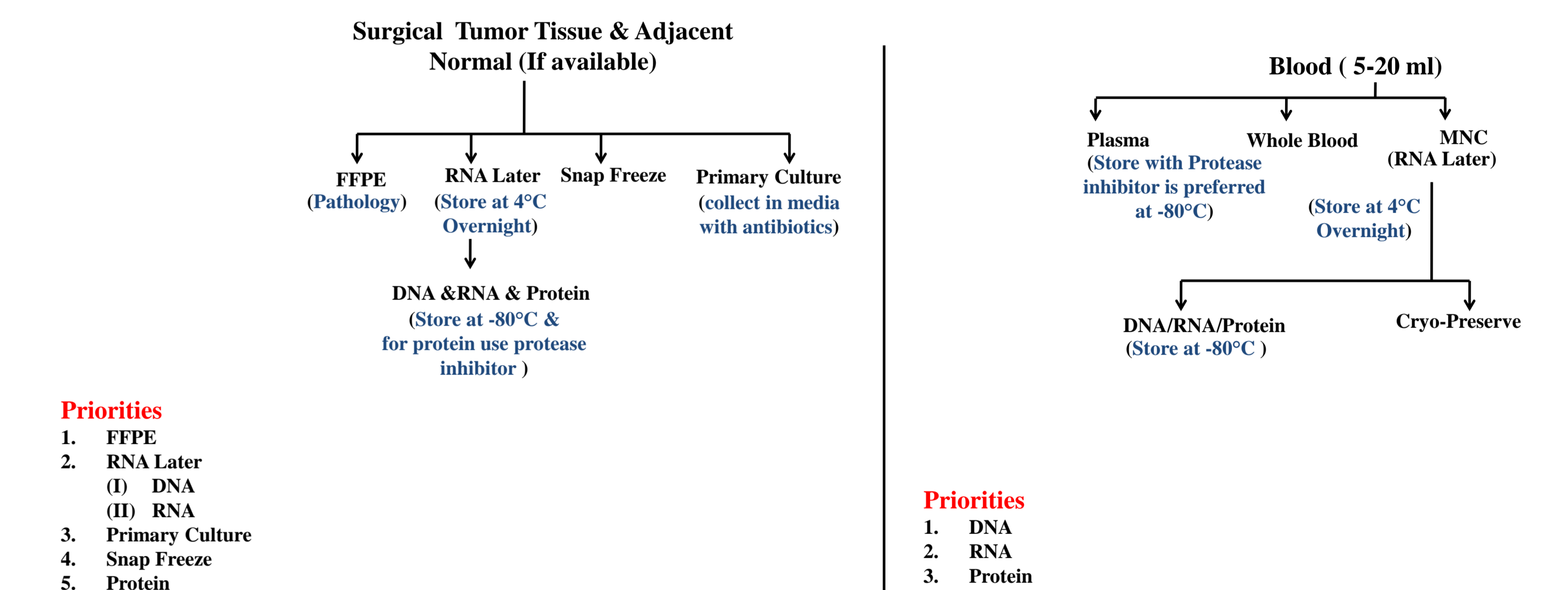
Overall Biobank Structure

- Biobank Software**
- Barcoding & Tracking**
- Defining a storage unit**

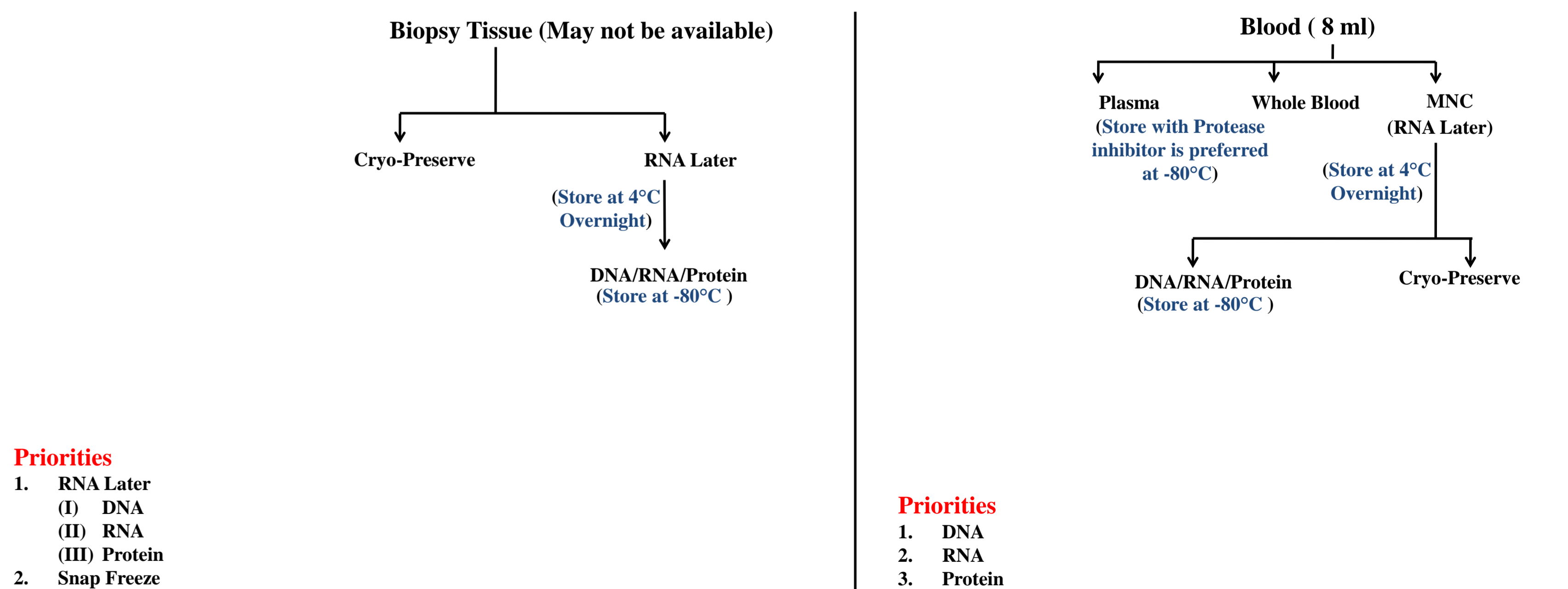
Biobank workflow of punch biopsy tissues and blood from OPD



Biobank workflow of tissues and blood collected from OT



Biobank workflow of tissues and blood collected from recurrence cases



Conclusions

- Banking of Cervical Cancer Patient's materials necessitates the acquisition of not just tumor tissue/blood with clinical history and robust follow-up, but also high quality molecular information such as somatic mutation, transcriptomic and DNA methylation profiles which have been shown to predict patient survival independent of current clinical indicators..

Acknowledgements

This work was supported by DBT on Systems Medicine Cluster (SyMeC): Cervical cancer Study