

# Research Opportunities Through Tissue Bank: *STR-SGH Satellite Bank*

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# Content

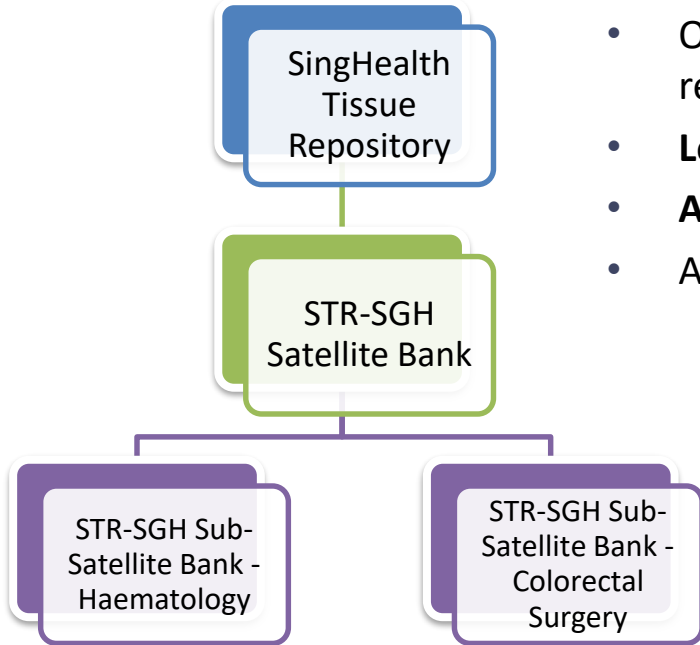
## ***Part 1 Organizational Structure***

1. STR-SGH Satellite Bank
2. STR-SGH Sub-Satellite Banks – Haematology & Colorectal Surgery
3. Scenarios For Tissue Banking Activity

## ***Part 2 Opportunities Afforded From Tissue Banking***

1. Enabling Research Through Tissue Bank
2. Research Outcomes

# STR-SGH Satellite Bank



- Established in April 2019
- Oversee tissue banking activities of PIs collecting HBM for future research
- **Location:** Academia, L9, Ngee Ann Kongsi Discovery Tower
- **Available storage options:** -80°C Freezers and Liquid Nitrogen Tanks
- Appointed as SGH Trusted Third Party for tissue de-identification

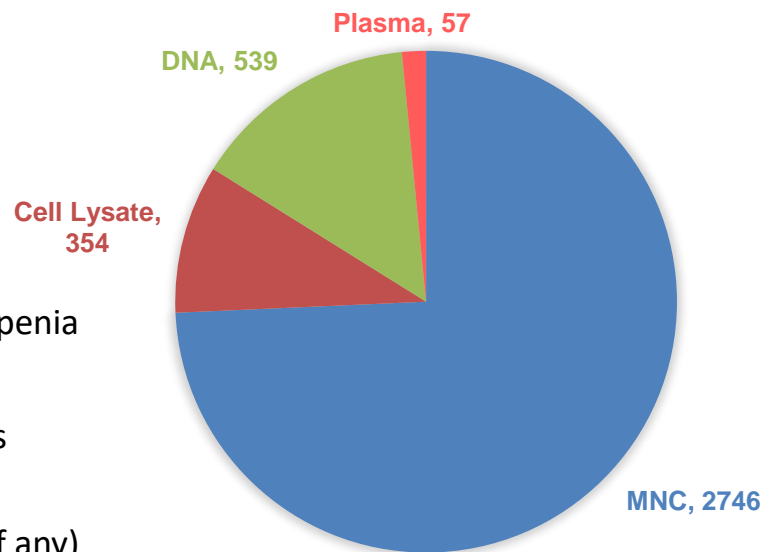
<b>Tissues Banked</b> <i>(to date)</i>	<b>Vials</b>
STR-SGH Satellite Bank	65
STR-SGH Sub-Satellite Bank - Haematology	3696
STR-SGH Sub-Satellite Bank - Colorectal Surgery	1288

<b>Tissues De-identified</b> <i>(to date)</i>	<b>Cases</b>
STR-SGH Satellite Bank (as TTP)	926

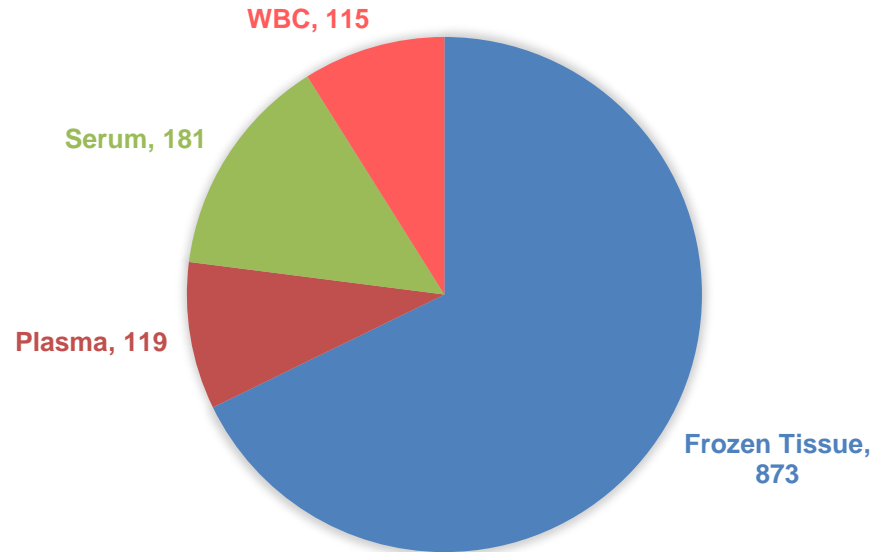
# STR-SGH Sub-Satellite Bank – Haematology

- Collection for the Department of Haematology commenced in 2008
- Most of the HBM collected before 1 November 2019 were declared as legacy samples
- Types of HBM currently stored:
  - Mononuclear cells (MNC)
  - Plasma
  - DNA
  - Cell lysate
- Examples of haematological disorders stored:
  - Myeloma
  - Myeloproliferative neoplasms
  - Myelodysplastic syndromes
  - Leukaemia
  - Anaemia
  - Immune thrombocytopenia
- Types of data collected by the Bank:
  - Basic demographics
  - Clinical diagnosis
  - Bone marrow report
  - Flow cytometry results
  - FISH results (if any)
  - Cytogenetics results (if any)



# STR-SGH Sub-Satellite Bank – Colorectal Surgery

- Collection for the Department of Colorectal Surgery commenced in 1989
- HBM collected before 1 November 2019 were all declared as legacy samples
- Types of HBM currently stored:
  - Frozen tissues [tumor tissues and matched normal tissues (if available)]
  - Serum
  - Plasma
  - White blood cell
- Examples of tumor types found in Bank:
  - Tubular adenoma
  - Mucinous adenocarcinoma
  - Adenocarcinoma
- Types of data collected by the Bank:
  - Basic demographics
  - Clinical diagnosis
  - Histopathology report



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# Scenarios To Bank Tissue

**Scenario 1:** To collect HBM for future research **without** any existing IRB approved study (e.g. tissue banking protocol that collects HBM from clinical procedures)

**Scenario 2:** To collect **additional** HBM for future research in an IRB approved study (e.g. collection of additional 5ml of blood for future research while collecting 10ml for current IRB approved study)

**Scenario 3:** To store **leftover** HBM at the end of an IRB approved period for future research

# Scenario 1 & 2 Collection Workflow

*(Without existing IRB/additional HBM)*



HBM Collection Form

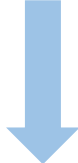
PI to complete the **HBM Collection Form** and submit to Tissue Bank

If the collection protocols are **outside** the scope of current STR collection protocols



Review and approval by SBRSA Executive Committee

If the collection protocols are **within** the scope of current STR collection protocols



Review and approval by STR

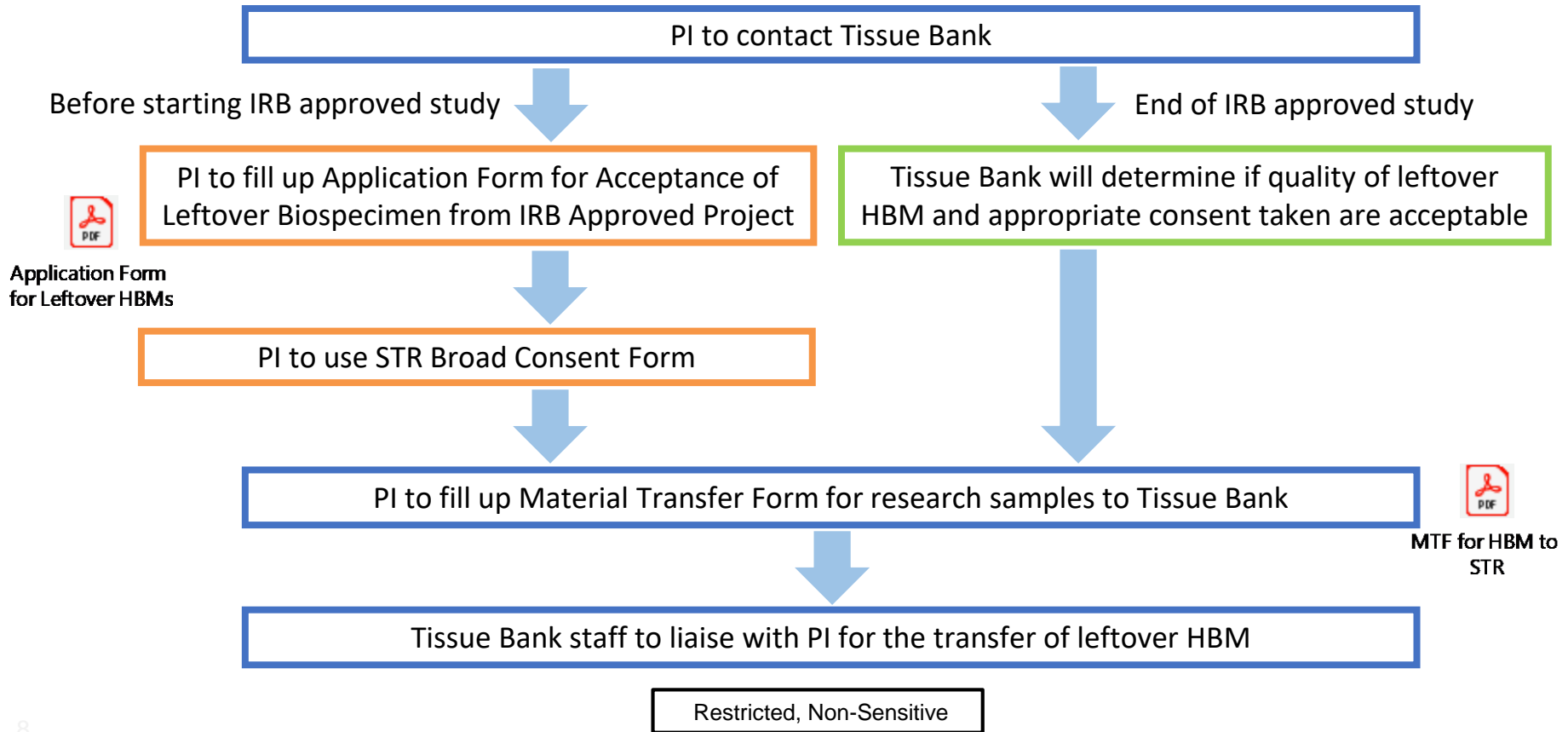


Initiate the collection using STR Broad Consent Form **customized** to project under the oversight of respective Tissue Bank

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# Scenario 3 Workflow

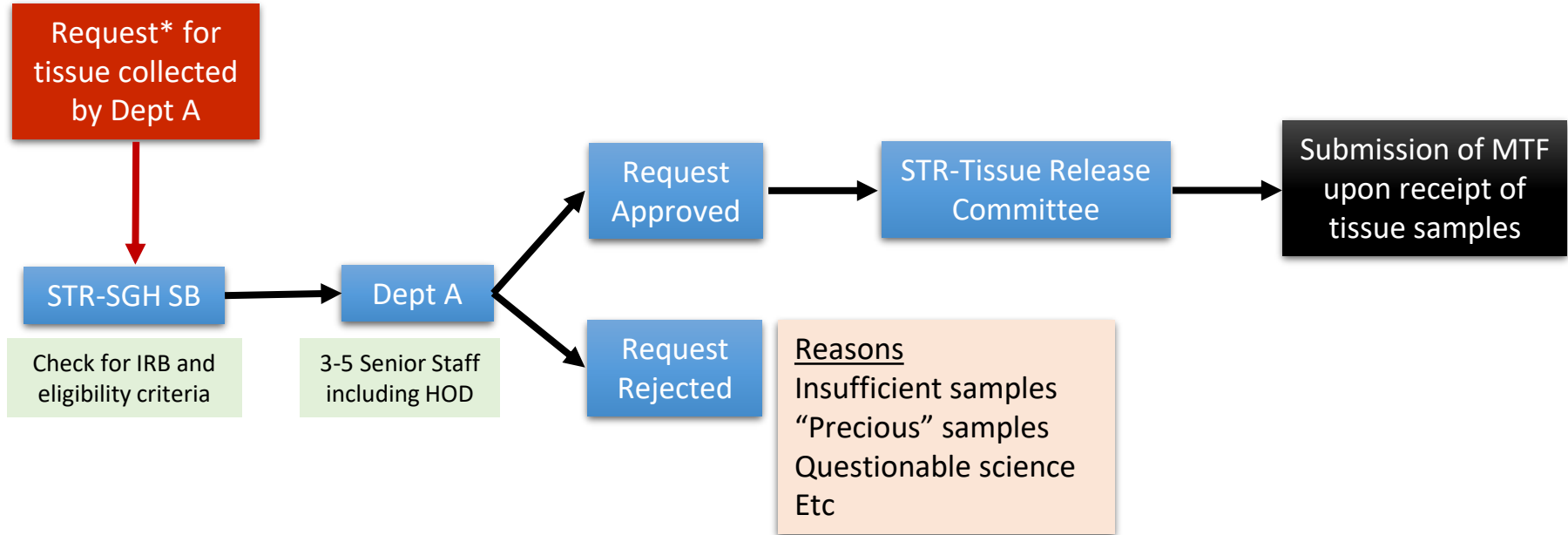
## *(Transfer of leftover HBM)*





# STR-SGH Satellite Bank & Sub-Satellite Banks

## Tissue Release Workflow



\*If PI is not from Dept A, must have collaborator from Dept A.

# Withdrawal of HBM from Tissue Bank

- Tissue Banks can release **non-identifiable** HBM for research when:
  1. An IRB has approved the proposed research that the HBM would be used for
- **OR**
- 2. The STR-Tissue Release Committee (STR-TRC) is satisfied that there is scientific merit for the proposed research
- The intended use of the HBM must be in accordance with any conditions or restrictions specified as part of the appropriate consent of the donor (e.g. if the donor did not consent to exporting of HBM from Singapore, PI who withdrawn such HBM will not be able to export the HBM)
- Submit an Application Form to the Tissue Bank for approval by STR-TRC



Application Form

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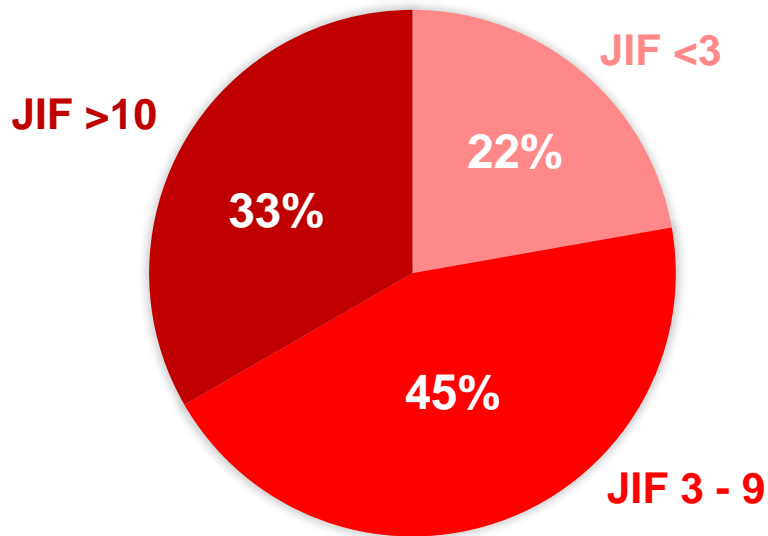
# Enabling Research Through Tissue Bank

- **Issue:** Leftover human tissues from clinical procedures that may be valuable for research is discarded as waste
  - Clinical laboratories are not allowed to supply leftover diagnostic tissues to PIs unless they are a Tissue Bank (TB)
- **Solution:** Transfer leftover diagnostic tissues to TB
  - Donors/patients will need to be consented using the STR broad consent form for research use
    - Consent can be taken at the same time as clinical procedures consent
    - Broad consent obviates the need to re-consent donors/patients for subsequent future research
- **Example:** Donor lymphocyte infusion (DLI) bags that are no longer required for patient management will be transferred to the STR-SGH Sub-Satellite Bank – Haematology for future research

# Research Outcomes - Haematology

In the past 10 years:

Total Number of Publications	Number of Publications with JIF >10
27	9



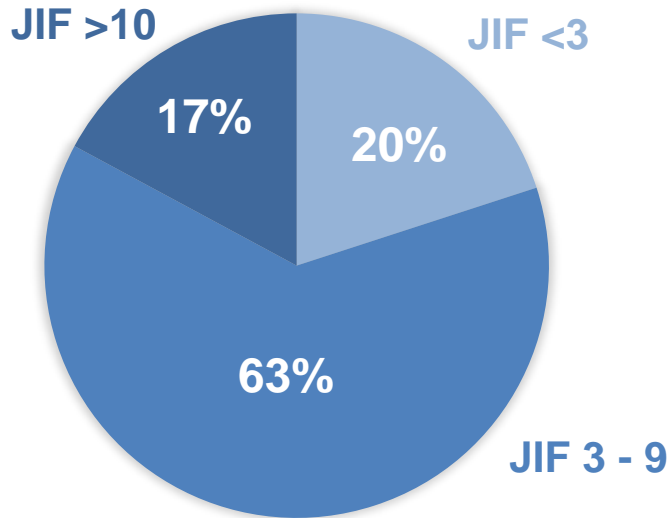
## Recent high JIF publications

JIF	Publication
11.53	Poon, Z., Dighe, N., Venkatesan, S. S., Cheung, A. M. S., Fan, X., Bari, S., Hota, M., Ghosh, S., & Hwang, W. Y. K. (2019). Bone marrow MSCs in MDS: contribution towards dysfunctional hematopoiesis and potential targets for disease response to hypomethylating therapy. <b>Leukemia</b> , 33(6), 1487–1500.
17.794	Ko, T. K., Javed, A., Lee, K. L., Pathiraja, T. N., Liu, X., Malik, S., Soh, S. X., Heng, X. T., Takahashi, N., Tan, J. H. J., Bhatia, R., Khng, A. J., Chng, W. J., Sia, Y. Y., Fruman, D. A., Ng, K. P., Chan, Z. E., Xie, K. J., Hoi, Q., Chan, C. X., ... Ong, S. T. (2020). An integrative model of pathway convergence in genetically heterogeneous blast crisis chronic myeloid leukemia. <b>Blood</b> , 135(26), 2337–2353.
11.53	Lee, K. L., Ko, T. K., Saw, N. Y. L., Javed, A., Hillmer, A. M., Chuah, C., Krishnan, V., & Ong, S. T. (2022). Validation and refinement of a RUNX1 mutation-associated gene expression signature in blast crisis chronic myeloid leukemia. <b>Leukemia</b> , 36(3), 892–896.

# Research Outcomes – Colorectal Surgery

In the past 10 years:

Total Number of Publications	Number of Publications with JIF >10
35	6



## Recent high JIF publications

JIF	Publication
11.205	Ray, D., Yun, Y. C., Idris, M., Cheng, S., Boot, A., Iain, T. B. H., Rozen, S. G., Tan, P., & Epstein, D. M. (2020). A tumor-associated splice-isoform of MAP2K7 drives dedifferentiation in MBNL1-low cancers via JNK activation. <b>Proceedings of the National Academy of Sciences of the United States of America</b> , 117(28), 16391–16400.
12.121	Zhu, G., Guo, Y. A., Ho, D., Poon, P., Poh, Z. W., Wong, P. M., Gan, A., Chang, M. M., Klefogiannis, D., Lau, Y. T., Tay, B., Lim, W. J., Chua, C., Tan, T. J., Koo, S. L., Chong, D. Q., Yap, Y. S., Tan, I., Ng, S., & Skanderup, A. J. (2021). Tissue-specific cell-free DNA degradation quantifies circulating tumor DNA burden. <b>Nature communications</b> , 12(1), 2229.

# Thank You

Please contact **STR-SGH Satellite Bank** (Oi Fah/Rochelle at 6326 5331/6576 7812)  
or email ([str.sgh.sb@sgh.com.sg](mailto:str.sgh.sb@sgh.com.sg)) for any enquires.



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