Centre for Integrated Genomic Medical Research

THE UNIVERSITY of MANCHESTER

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Discussion document for Biobank Sample Processing and Storage

- **Discussion document with suggestions and ideas**
- **Confidentiality**
- **Framework for Sub-Committee**

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Major considerations

Maximising

- **Potential for future proofing studies**
- **Quality assurance**
- **Sample tracking and ID verification**
- **Automation of procedures**

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Major considerations

Minimising

- **Costs**
- **Sample volumes required**
- **Human error**
- **Sample processing until individuals are selected for downstream study**

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Furthermore

Important to:

- **Identify proven technologies for immediate solutions rather than speculative measures**
- **Be pragmatic realists rather than delude ourselves that money is no object**

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Recommendations – collection and transport

- Volume of blood required could be <25ml
- Aliquots of blood with 10% DMSO for PBL could be cryopreserved by nurses
- Aliquots of blood for RNA could be cryopreserved by nurses
- Nationwide courier services best mechanism for sample transport

Recommendations - Processing

- Advantages gained by central processing suggest this is best option
- Sample storage may be best kept separate from processing
- A single Biobank LIMS is required for sample collection, processing and storage

Recommendations – Storage 1

- To facilitate full sample audit trail and automated storage/retrieval will require a major investment in hardware and informatics, which is best kept within Biobank
- Duplicate samples could be kept in separate buildings rather than separate cities
- Concept of active versus inactive storage
- Back-up samples kept as large aliquots in low cost/low automated facilities

Recommendations – Storage 2

- Extraction of DNA should not be performed on every volunteer but be restricted to only those requiring genetic analysis
- Paper based blood storage provides the best option for long-term DNA storage
- An automated retrieval system for paper stored samples is required

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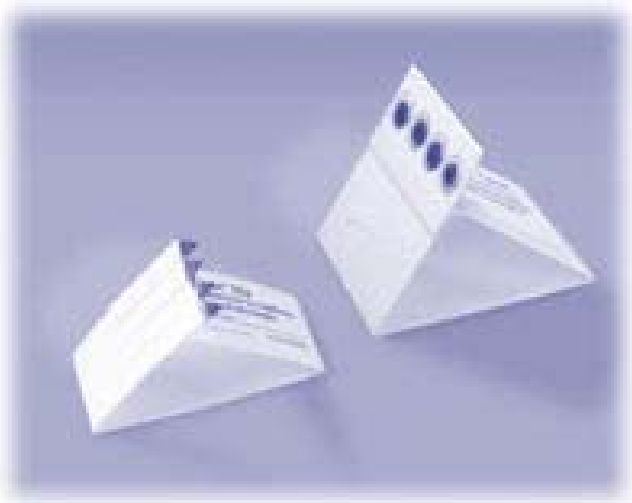
Isocode DNA Storage Paper



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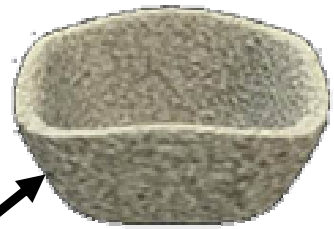
Genvault – FTA Paper Storage System



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REMP Automated Sample Store

Solutions for Compound Logistics ranging from -20°C to +20°C

REMP AG
Weststrasse 12
CH-3672 Oberdiessbach
Switzerland
Tel: +41(0)31 770 70 70
Fax:+41(0)31 770 72 66
Email: info@remp.com

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Holliston, MA 01746
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Tel: 800-460-7367
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Email: info.nippon@remp.com

www.remp.com

Recommendations – Storage 3

- **Small aliquots of plasma (? and serum) stored in 2D barcoded picotubes at –80°C in automated Biophile retrieval systems**

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2D Labelled Micro/Pico tubes

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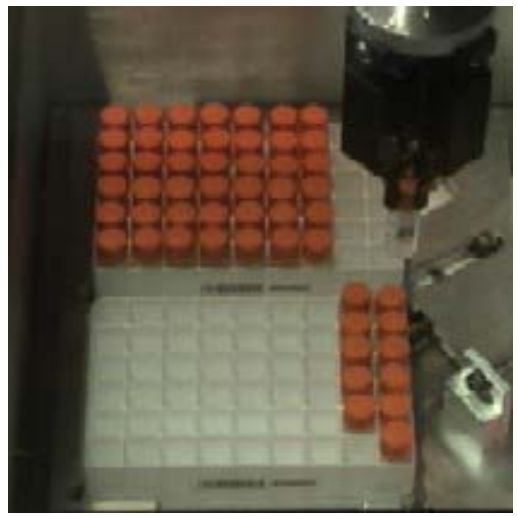
Biophile – Audited -80°C Storage/Retrieval



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Recommendations – Storage 4

- Potential storage of RNA from blood is possible
- Whole blood aliquots frozen in 10% DMSO kept in liquid N_2 at ECACC

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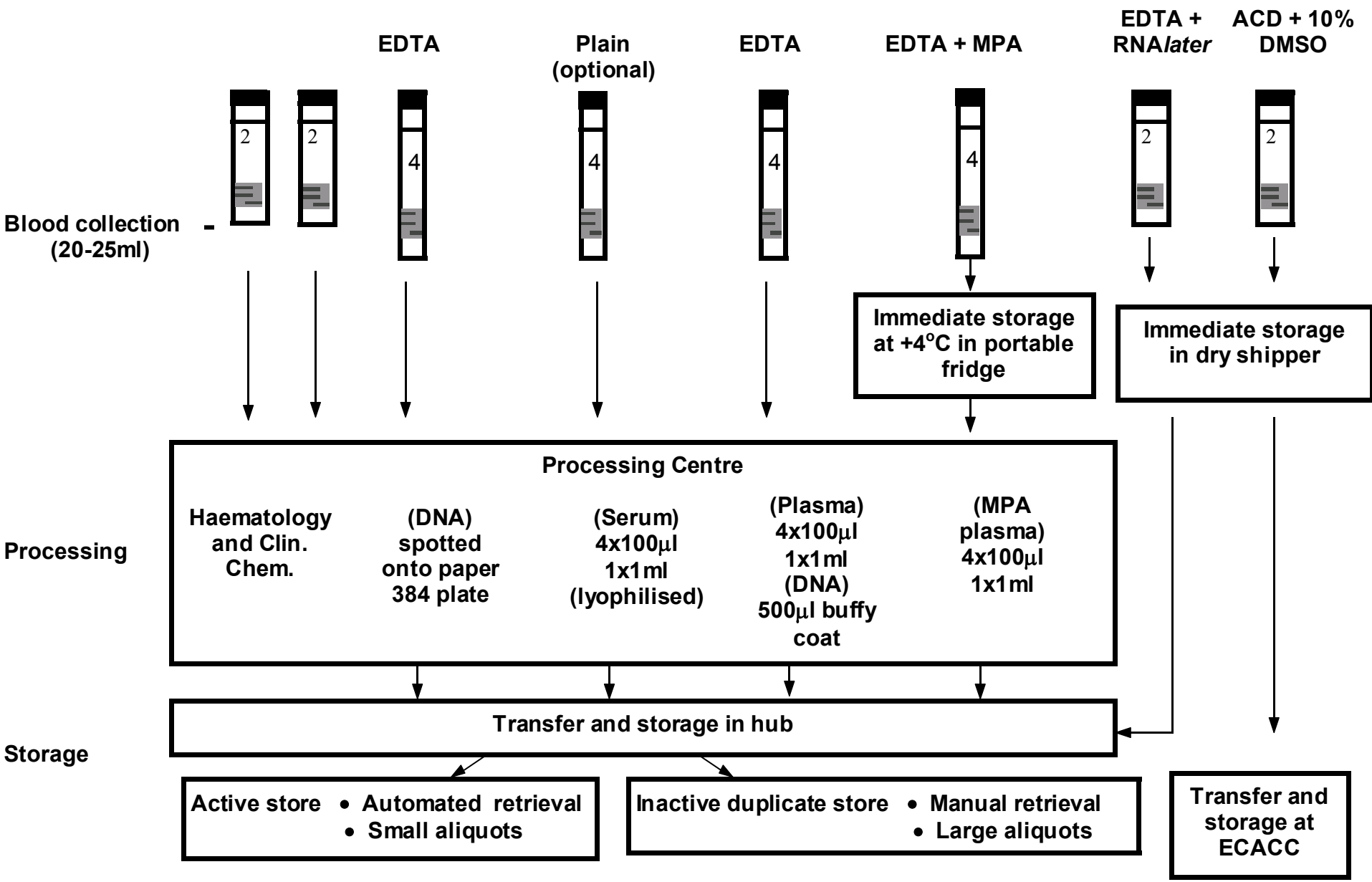

Suggested scheme for sample processing and storage

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