



Pioneering Minds



FLEXIBILITY IN BIOBANKING: BALANCING COLLECTIONS ON DEMAND AND RETROSPECTIVE USE?

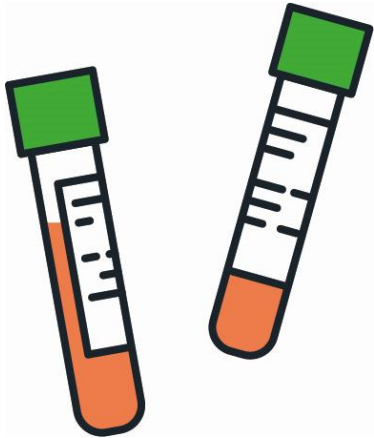
Monika Valjan

Navigating current research needs vs. leveraging past collections

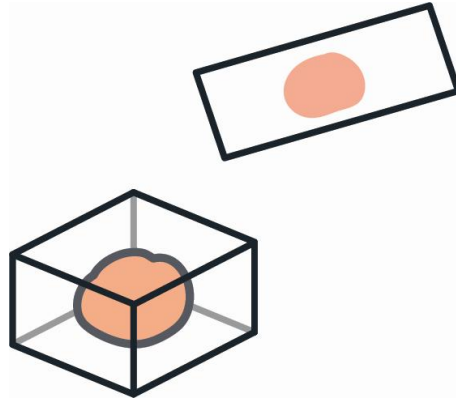
- ▶ Biobanking has evolved from a static collection and storage of samples to a dynamic framework addressing specific research needs
- ▶ Overview of traditional biobank cohorts
 - ▶ Estonian Biobank
 - ▶ Finnish Maternity Cohort
 - ▶ German National Cohort (NAKO)
 - ▶ KORA study
 - ▶ BioPersMed



Our Biobank: A Wealth of Resources



1.700.000
liquid aliquots



7.400.000 FFPE blocks
14.700.000 FFPE slides



38.000 tubes with
cryo samples

These samples represent invaluable research potential, making sustainable storage paramount.

Introduction of the two projects being compared:

▶ **DIOPTRA: Innovative "Biobanking on Demand" approach**

- ▶ Newly defined cohort
- ▶ <https://dioptra-project.eu>



dioptra

▶ **Multiplex: Retrospective sample utilization**

- ▶ Samples collected during routine processes
- ▶ <https://www.multiplexdx.com>



Multiplex
DX

Project Overview: DIOPTRA - Biobanking on Demand

EU project DIOPTRA aims to introduce a front-line screening tool that will consider risk factors and protein biomarkers for pinpointing individuals at high risk for colorectal cancer (CRC) incidence.

Challenge:

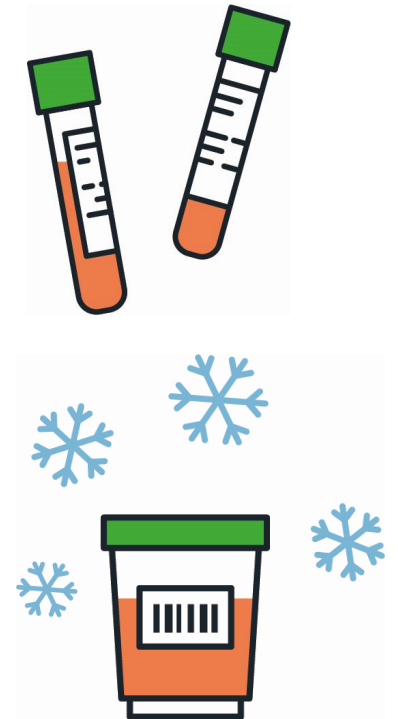
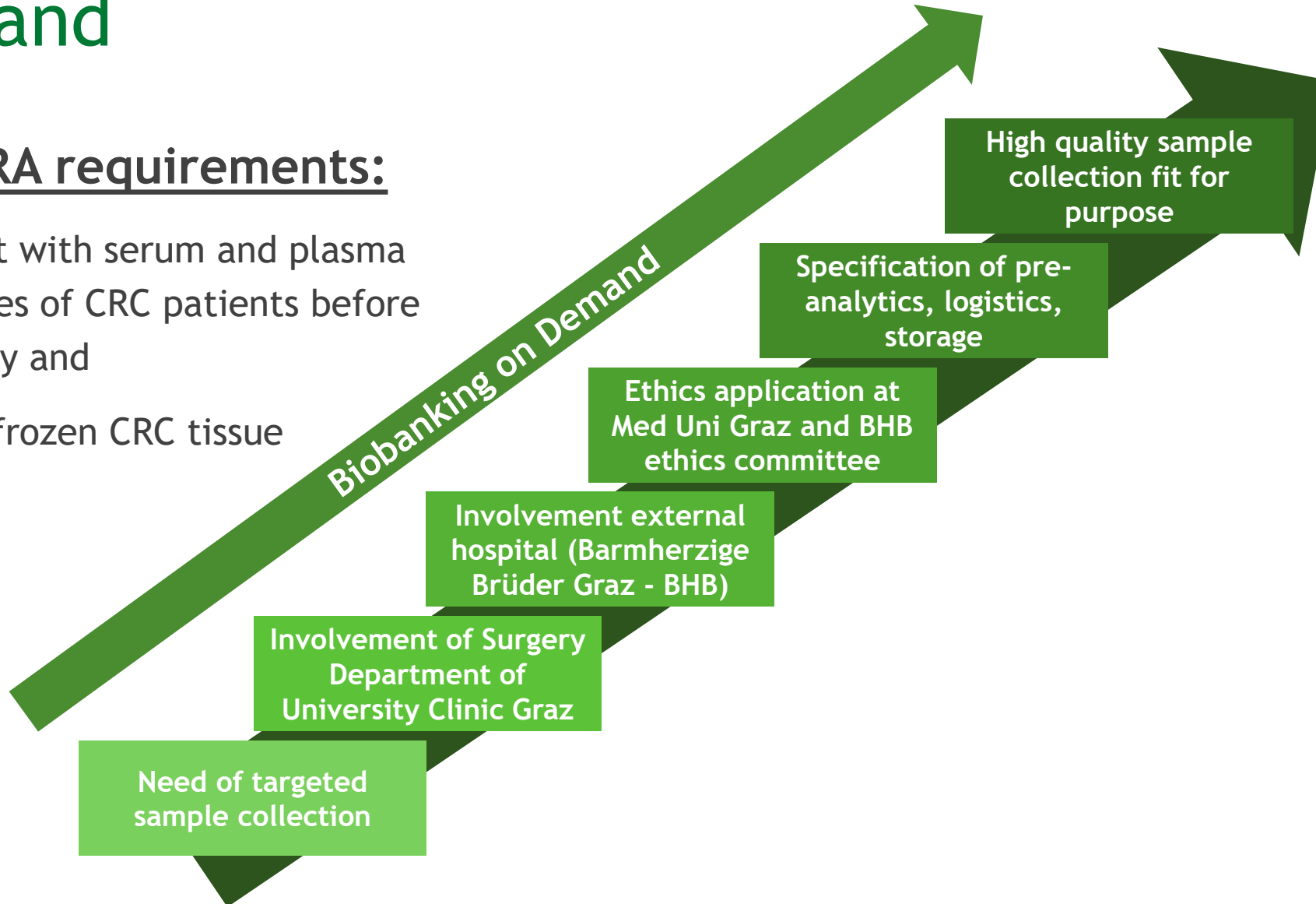
- ▶ Need for serum and plasma samples before surgery and treatment and fresh frozen tissue from surgery
- ▶ Available retrospective sample collections are not suitable
- ▶ E.g. samples of oncology department have been collected after surgery during treatment
- ▶ Majority of CRC surgeries are performed at an external site and not at the University Hospital Graz
- ▶ Complex logistics for sample of external hospital:
 - ▶ Tissue from surgeries are transported to external pathology department as part of their standard diagnostic process
 - ▶ Biobank cohorts must be integrated into this process



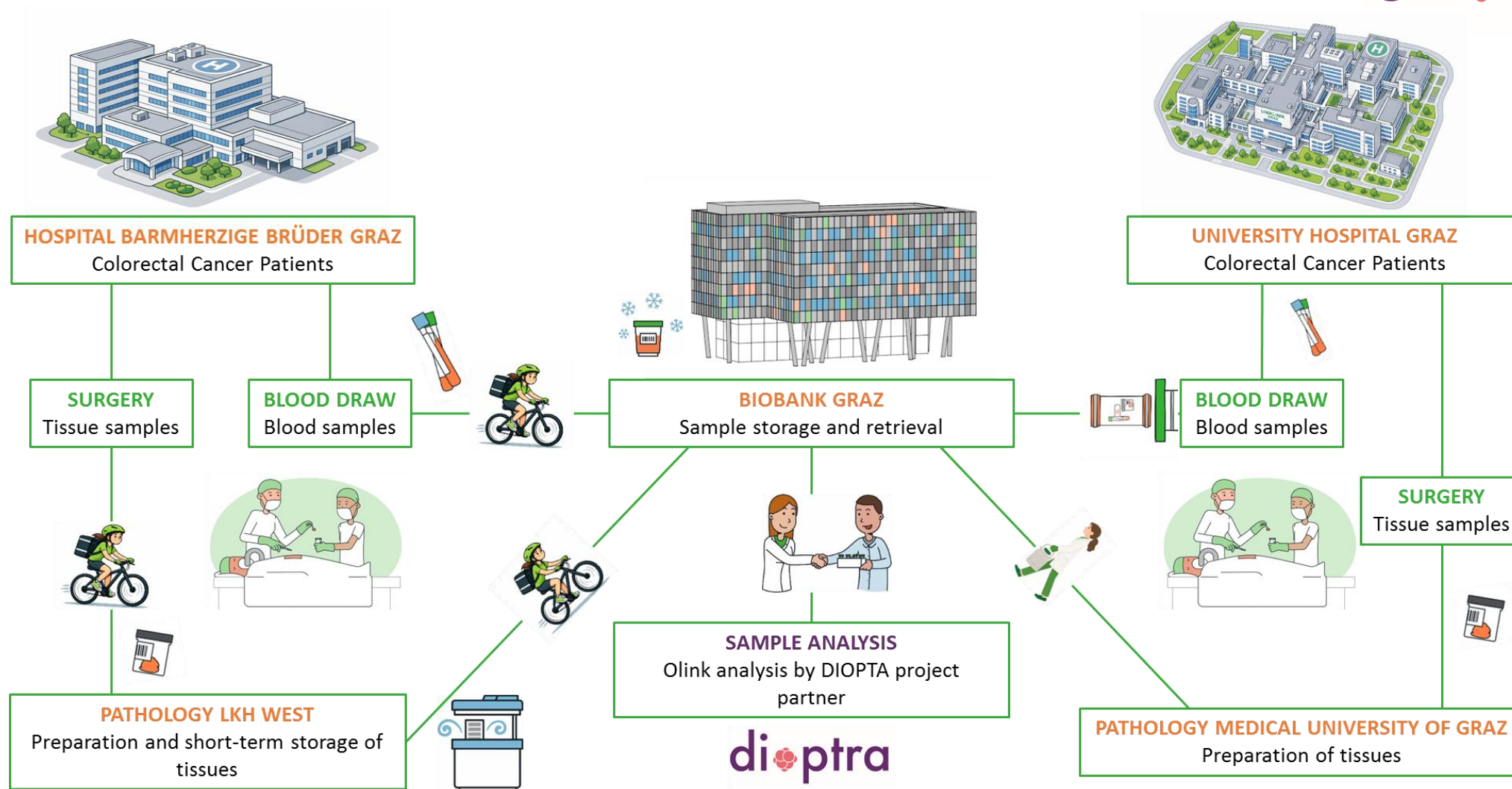
Project Overview: DIOPTRA - Biobanking on Demand

DIOPTRA requirements:

- ▶ Cohort with serum and plasma samples of CRC patients before surgery and
- ▶ fresh frozen CRC tissue



Project Overview: DIOPTRA - Biobanking on Demand



Project Multiplex: Retrospective Sample Use



Aim of the Project

- ▶ Validation of a breast cancer diagnostic test for effective personalized treatment and assessment of therapy response
- ▶ From 947 identified patients - 399 selected breast cancer patients
- ▶ 3528 FFPE blocks (Formalin-fixed, paraffin-embedded)
- ▶ Supported by extensive clinical and pathological data

Multiplex requirements:

- ▶ FFPE tissue blocks (Formalin-fixed, paraffin-embedded) of breast cancer patients

Retrospective use

Multiplex Contacted
Biobank Graz

Multiplex Project
Description

Checking Sample
Availability

Ethics application at
Med Graz committee

Specification of
Workflow

Provision of
Samples

nature communications

Article

<https://doi.org/10.1038/s41467-024-55583-2>
















The spatially informed mFISHseq assay resolves biomarker discordance and predicts treatment response in breast cancer

Received: 1 July 2024

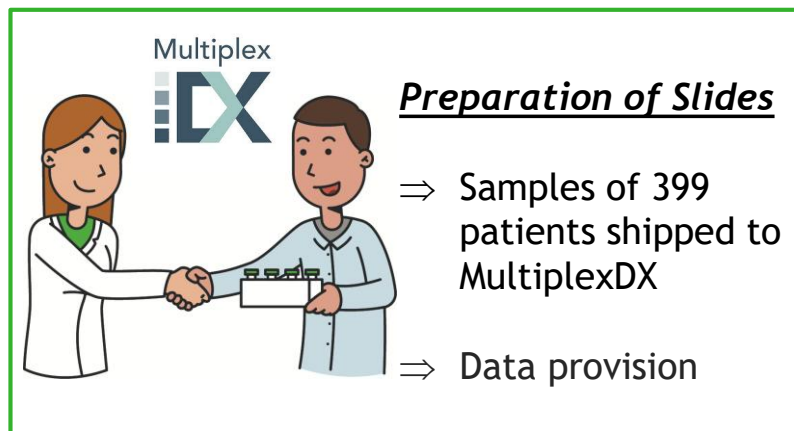
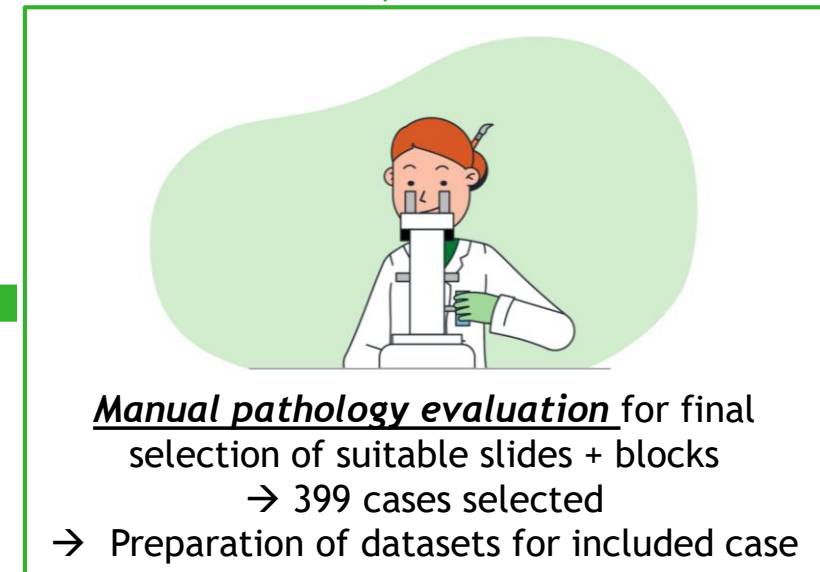
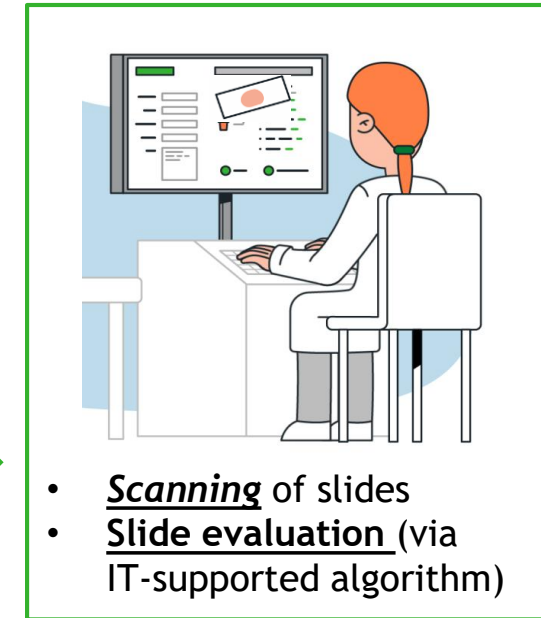
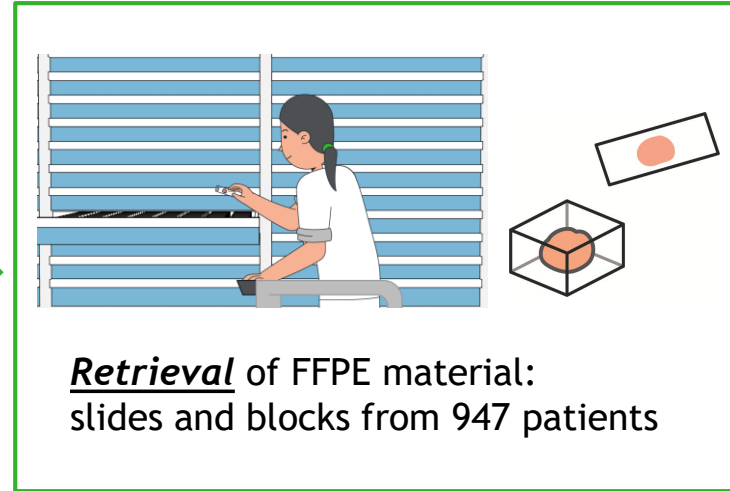
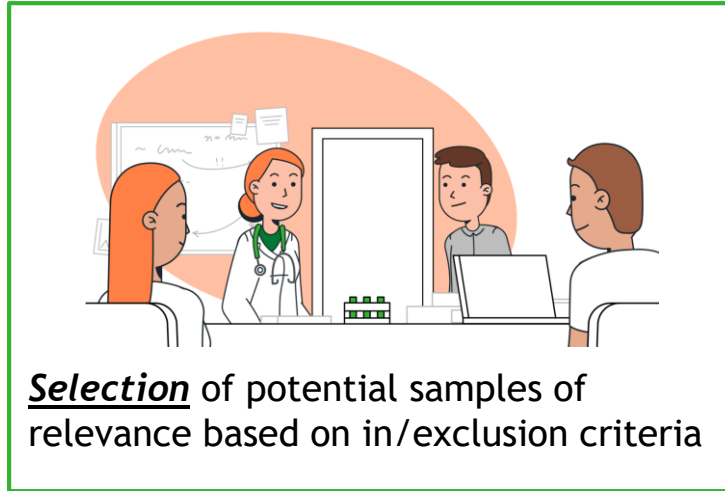
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 Check for updates

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Project Overview: Multiplex: Retrospective sample utilization



A Direct Comparison

DIOPTRA: Biobanking on Demand

- ▶ serum and plasma, fresh frozen tissue, specific
 - ▶ Availability, flexibility, data



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Multiplex: Retrospective Use

- ▶ FFPE tissue from routine diagnostic processes
 - ▶ Large cohort, extensive data



Multiplex


A Direct Comparison

- ▶ Both approaches made valuable contributions and addressed different needs.

DIOPTRA: Biobanking on Demand

- ▶ Emphasized the need for flexible sample availability for current research questions
- ▶ Identified requirements for quick provision of specific sample types



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Multiplex: Retrospective Use

- ▶ Demonstrated successful integration of retrospective samples to enhance research outcomes
- ▶ Showed the value of biobanks with well documented long term collection



Multiplex
iDX

A Flexible Biobanking Model



- ▶ Biobanks should adopt a flexible structure that accommodates both immediate and retrospective research needs
- ▶ Balance between "on Demand" (dynamic, current) and "retrospective" (large cohorts, long-term data)
- ▶ Significant increase in the usability of biobanks in clinical research

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