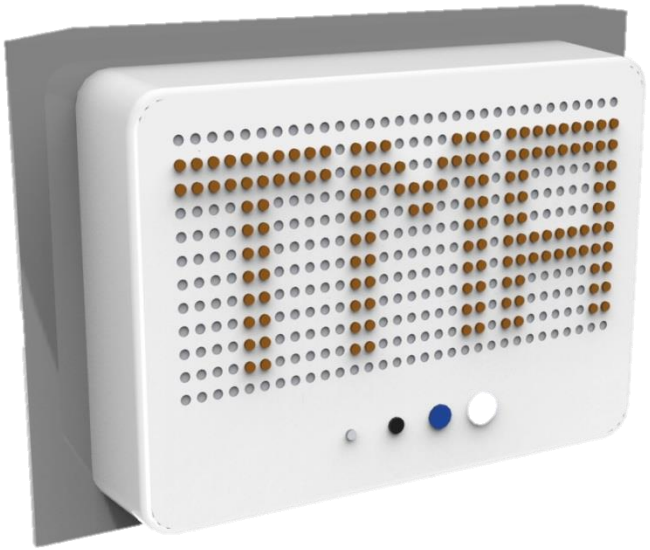
3DHISTECH

RENEWED DIGITAL TISSUE MICROARRAY (TMA) MACHINERY AND SOFTWARE WITH PCR EXTRACTION FUNCTION



Attila Szautner

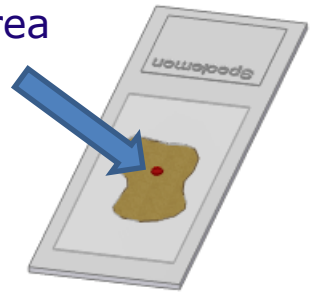
TMA technology

3DHISTECH

Glass slide

Marked area

1.



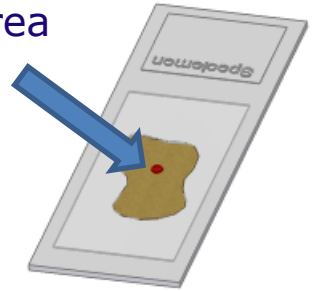
TMA technology

3DHISTECH

Glass slide

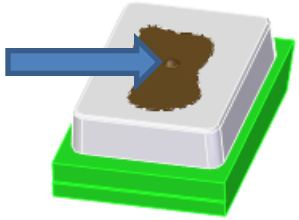
Marked area

1.



Matching area on the donor block

2.



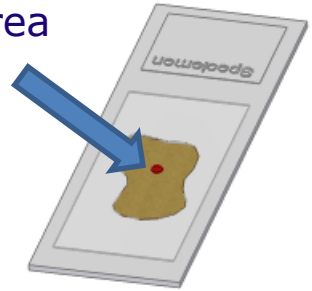
TMA technology

3DHISTECH

Glass slide

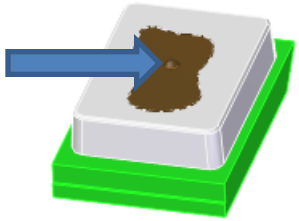
Marked area

1.



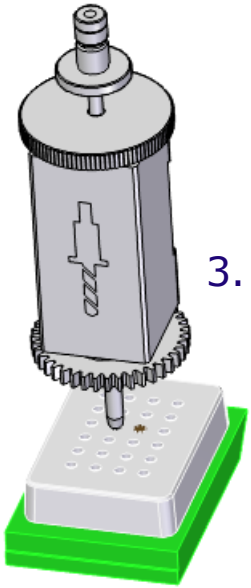
Matching area on the donor block

2.



Embedding

3.



Recipient block

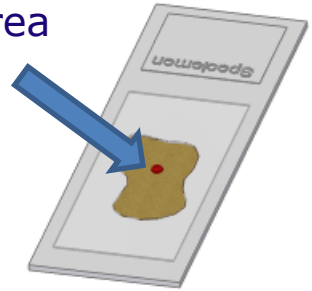
TMA technology

3DHISTECH

Glass slide

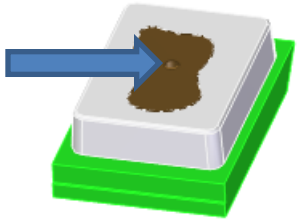
Marked area

1.



Matching area on the donor block

2.



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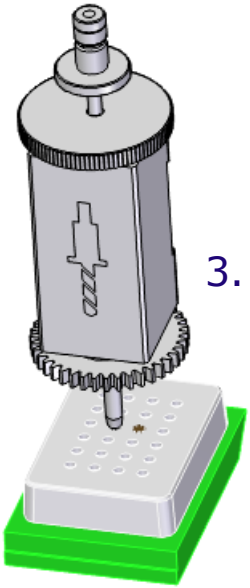
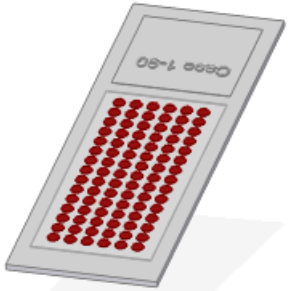
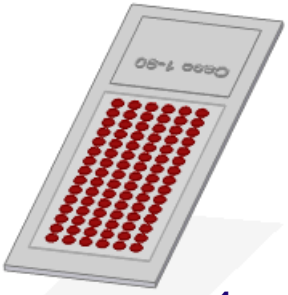


3.

Recipient block

IHC, FISH





4.

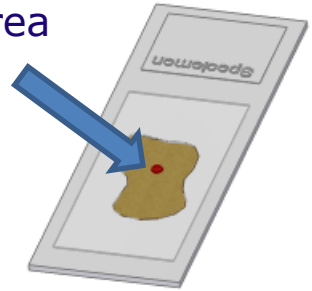
TMA technology

3DHISTECH

Glass slide

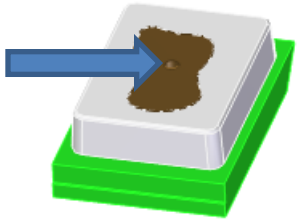
Marked area

1.



Matching area on the donor block

2.



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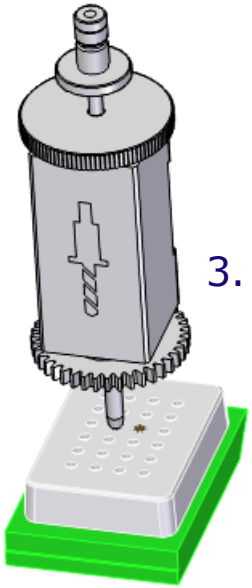

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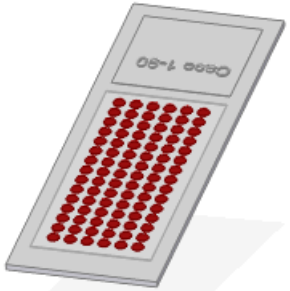
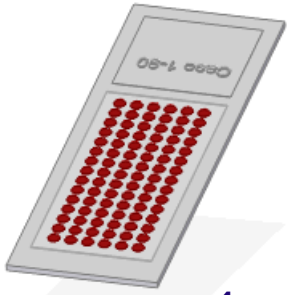
Recipient block

IHC, FISH





4.

Scoring

5.

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Advantages

- **Save:**
  - Reagent
  - Time
  - Tissue
  - Workforce

- **Standardized laboratory conditions**
- **Central data handling**

Case Selection

- **Collecting donor blocks**
- **Preparing clinical data**

	A	B	C	D	E
1	Donor Block ID	Organ	Diagnosis	Grade	Sender institute
2	1023-03	breast	IDC	G1	Bay
3	1199-02	breast	IDC	G3	S.E. I. Pathology
4	1222-03	breast	IDC	G2	Bay
5	1315-02	breast	IDC	G2	S.E. I. Pathology
6	1324-03	breast	ILC	G1	Bay
7	1416-04	breast	ILC	G2	Bay
8	1610-04	breast	IDC, comedo	G2	Bay
9	1643-04	breast	IDC	G3	Bay
10	1722-02	liver	cirrhosis	G0	Szombathely
11	1826-02	breast	DCIS	G0	S.E. I. Pathology
12	1877-02	breast	ILC	G2	Natl. Inst. Cancer
13	210-04	breast	Mucinosus carci	G2	Bay
14	28-05	lymph node	ADC metastasis	poor	Bay
15	322-02	breast	IDC	G2	S.E. I. Pathology
16	33-05	breast	IDC	G3	Bay
17	4761-02	breast	DCIS	G0	S.E. I. Pathology

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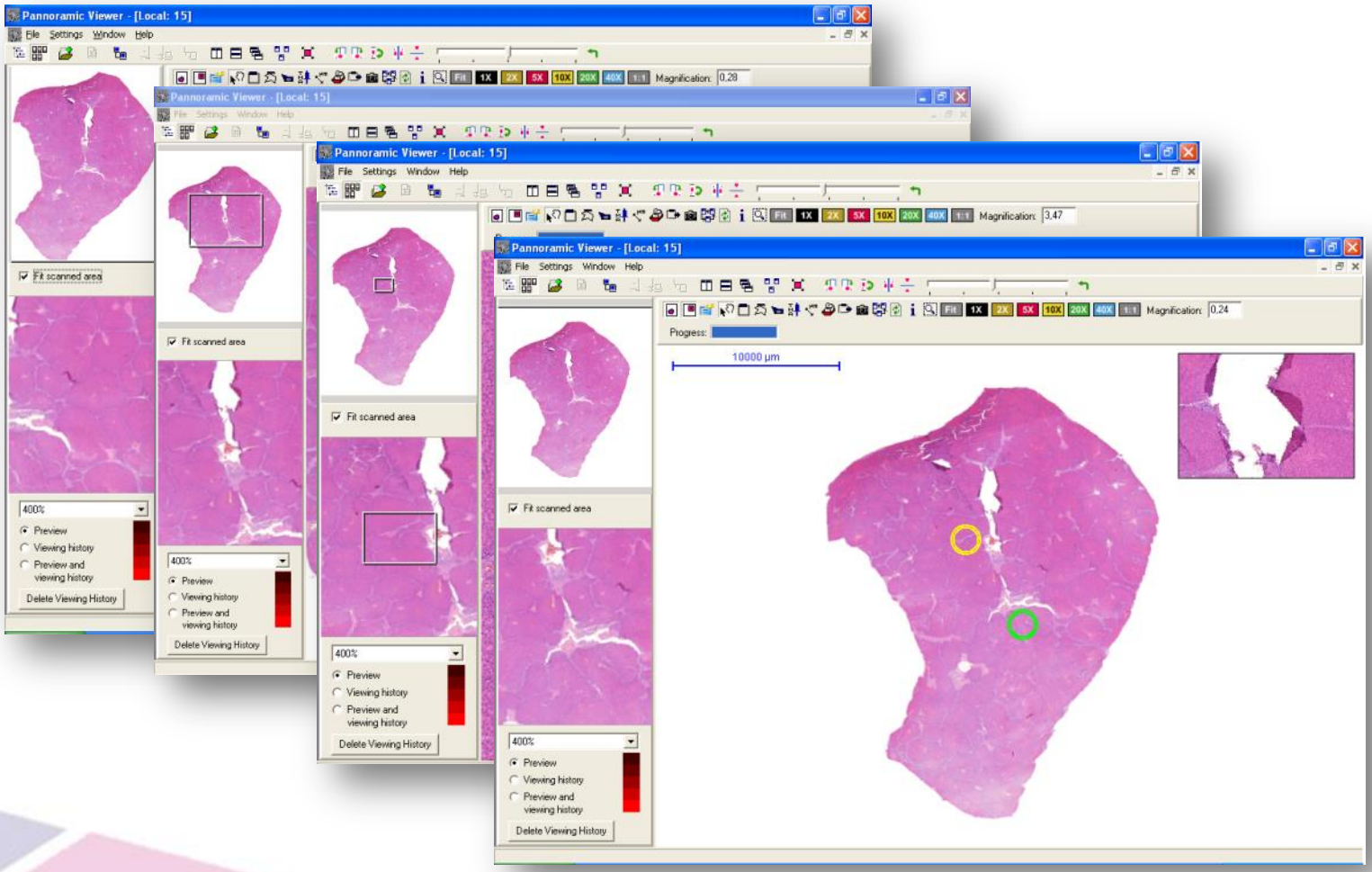
Analysis of digital slides, Creating markers

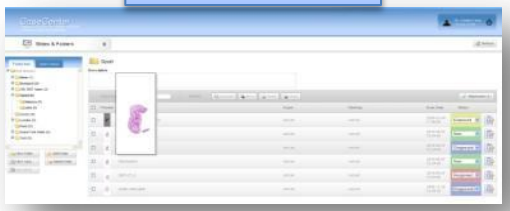


Workflow, Evaluation of TMA slides

3DHISTECH

EVALUATION & ANALYSIS

Case Center



SCANNING THE TMA SLIDES

DNA isolation, DNA amplification, DNA sequencing

PCR extraction

TMA BLOCK CREATION

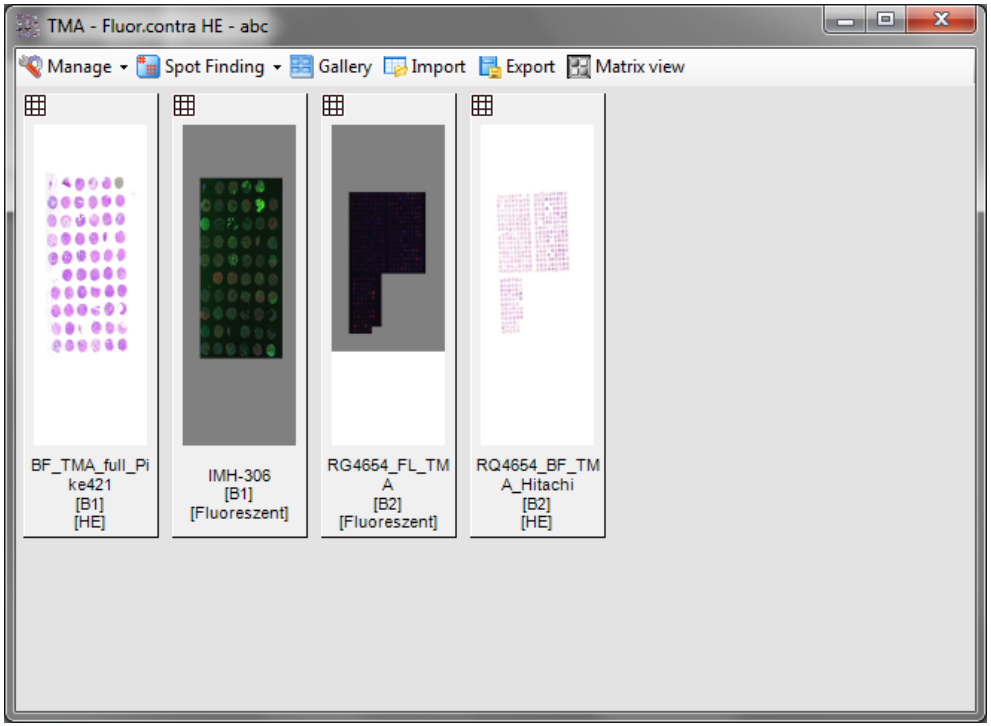
Slide preparation tools

TMA Module Software

- The TMA Module deals with simultaneous handling of many slides and cores
- Multi-user option (Consolidator function)
- Filter the spots in the gallery by different parameters (unscored – rescored)
- Statistical analysis
- Simple or Combined scoring scheme

Workflow steps of the TMA Module

- **Preparing the Excel sheet for the TMA project**
- **Spot finding**
- **Scoring and managing slides**
- **Export data and images**



Preparing the Excel sheet for TMA project

3DHISTECH

	A	B	C	D
1	Unique TMA Sample ID	TMA Block ID	Donor Block ID	
2	1	Block1	xyz1	
3	2	Block1	xyz2	
4	3	Block1	xyz3	
5	4	Block1	xyz4	
6	5	Block1	xyz5	
7	6	Block1	xyz6	
8	7	Block1	xyz7	
9	8	Block1	xyz8	
10	9	Block1	xyz9	
11	10	Block1	xyz10	
12	11	Block1	xyz11	
13	12	Block1	xyz12	
14	13	Block1	xyz13	
15	14	Block1	xyz14	
16	15	Block1	xyz15	
17	16	Block1	xyz16	
18	17	Block1	xyz17	
19	18	Block1	xyz18	
20	19	Block1	xyz19	
21	20	Block1	xyz20	
22	21	Block1	xyz21	
23	22	Block1	xyz22	
24	23	Block1	xyz23	
25	24	Block1	xyz24	
26	25	Block2	xyz25	
27	26	Block2	xyz26	

Lookup | Block1 | Block2 | Block3 | Slides

	A	B	C	D	E	F
1	Block1	X1	X2	X3	X4	
2	Y1	1	2	3	4	
3	Y2	5	6	7	8	
4	Y3	9	10	11	12	
5	Y4	13	14	15	16	
6	Y5	17	18	19	20	
7	Y6	21	22	23	24	

Lookup | Block1 | Block2 | Block3 | Slides

Block1

	A	B	C	D	E	F
1	Block2	X1	X2	X3	X4	
2	Y1	25	26	27	28	
3	Y2	29	30	31	32	
4	Y3	33	34	35	36	
5	Y4	37	38	39	40	
6	Y5	41	42	43	44	
7	Y6	45	46	47	48	

Lookup | Block1 | Block2 | Block3 | Slides

Block2

	A	B	C	D	E	F
1	Block3	X1	X2	X3	X4	
2	Y1	49	50	51	52	
3	Y2	53	54	55	56	
4	Y3	57	58	59	60	
5	Y4	61	62	63	64	
6	Y5	65	66	67	68	
7	Y6	69	70	71	72	

Lookup | Block1 | Block2 | Block3 | Slides

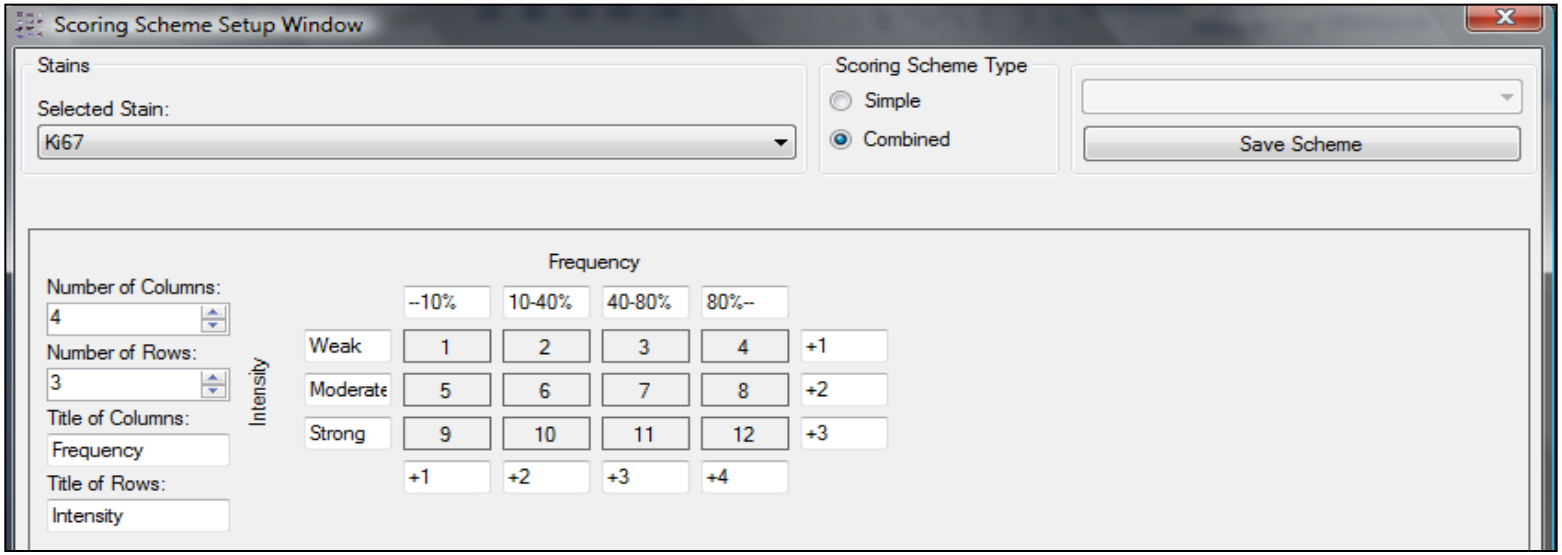
Block3

	A	B	C	D
1	Stain	Block1	Block2	Block3
2	Ki67	23-Ki67-Mib1	24-PKi67	
3	ER	21-ER-6F11	27-ER-6F11	30-ER-SP1-Chem

Lookup | Block1 | Block2 | Block3 | Slides

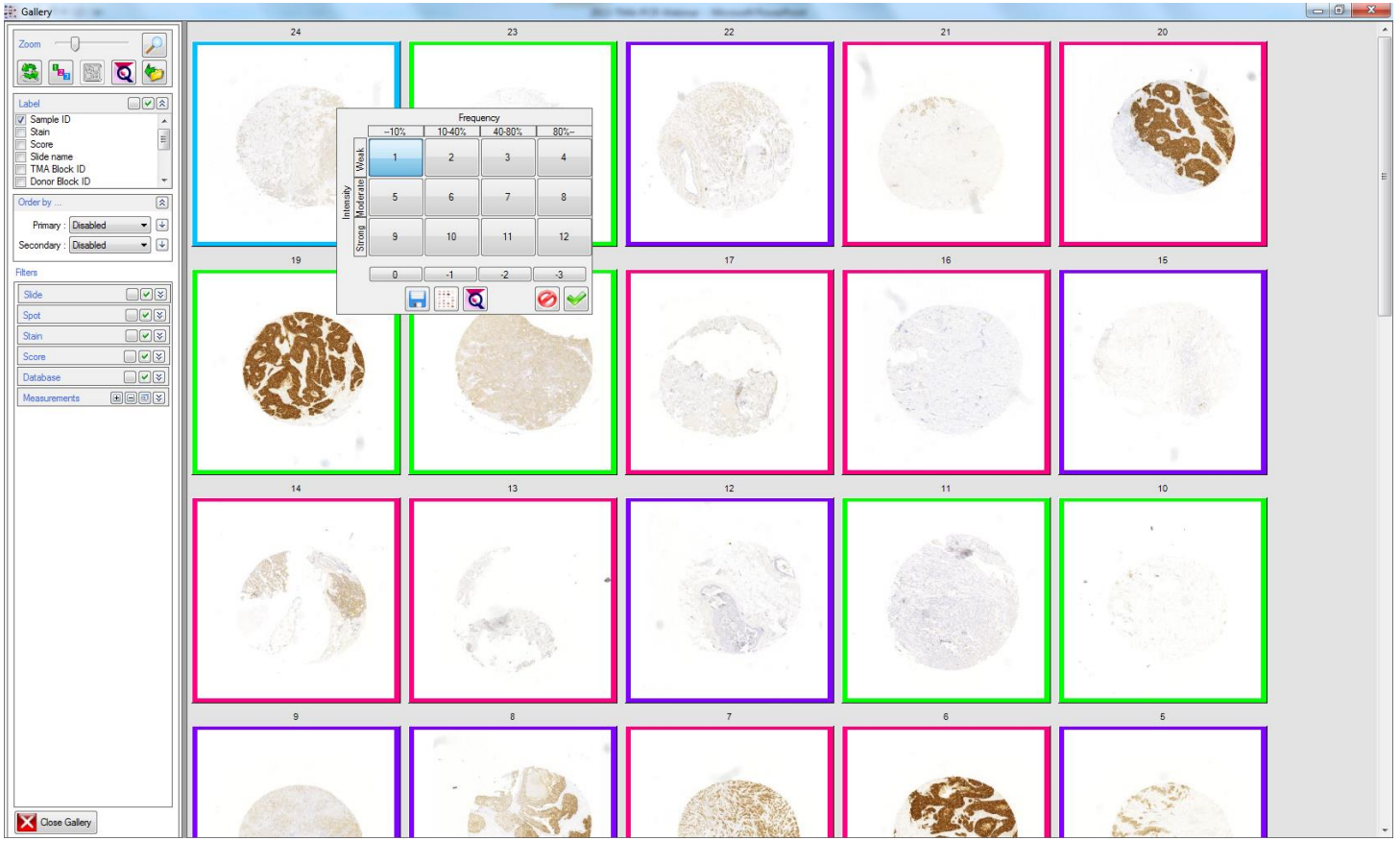
Scoring and managing slides

- **Combined Scoring**



Scoring and managing slides, Gallery

- Scoring spots
- Ordering spots
- Filtering spots



3DHISTECH

TMA Grand Master

- **72 block capacity:**
  12 recipient blocks, 60 donor blocks
- **4 donor punch and drill bit sizes:**
  0.6, 1, 1.5, 2 mm
- **2 digital cameras (1 for label and 1 for block view)**
- **Automated block and tool height measurement by sensor**
- **Separately controlled puncher and drill bit**
- **Parallel block feeding, drilling, punching and image capture**

TMA Grand Master

- **Faster movements and faster workflow**
- **Computer-aided tasks:**
  - Recipient block layout design
  - Assign a digitized slide to a donor block
  - Data export to Excel

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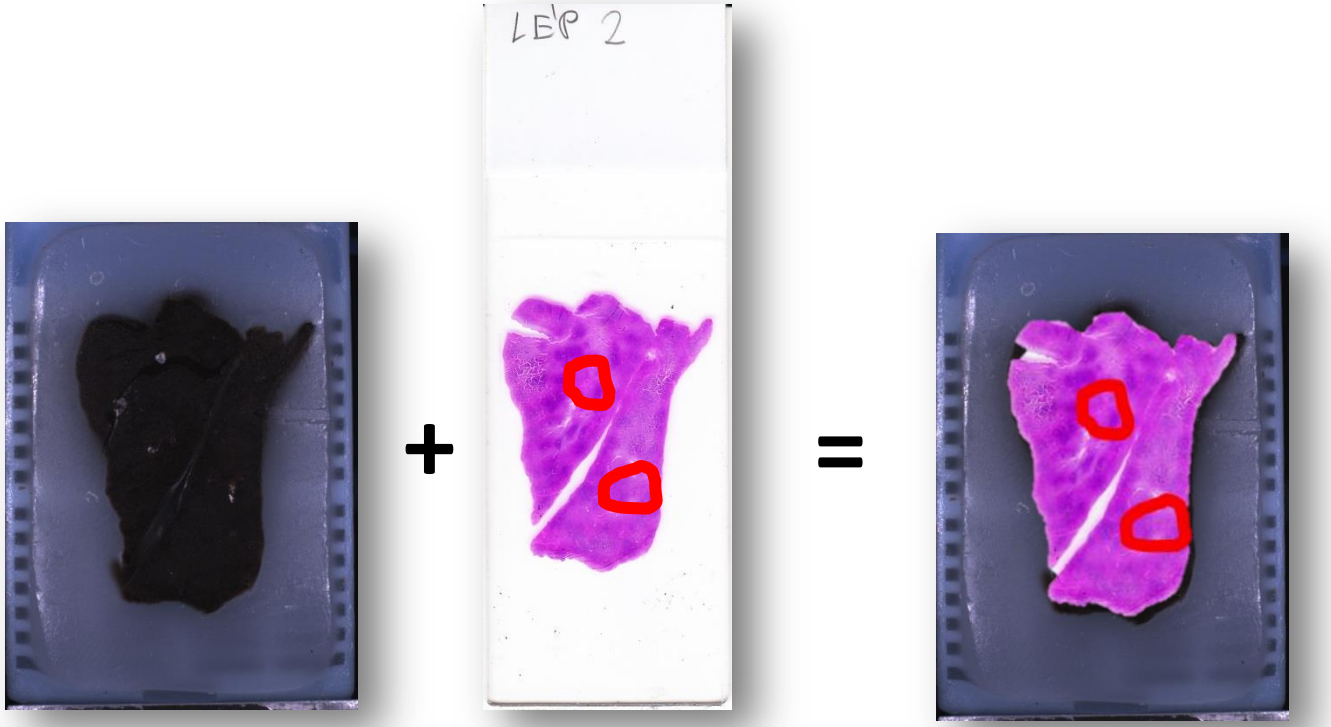
TMA Grand Master

Jpg image overlay

- **Set the transparency near the block image**

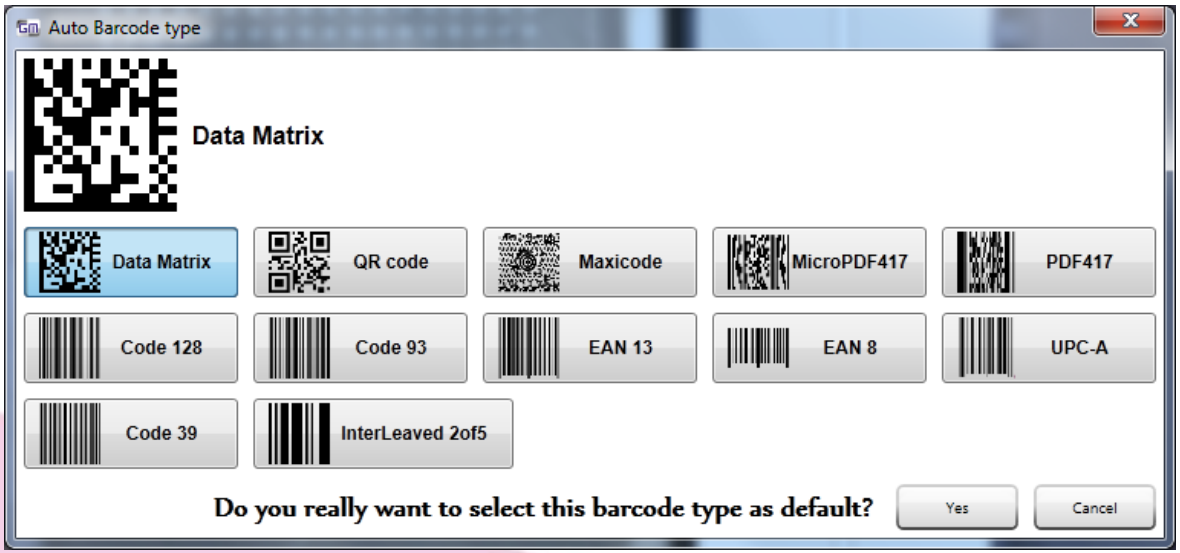


Barcode reading

- **Auto Barcode button**

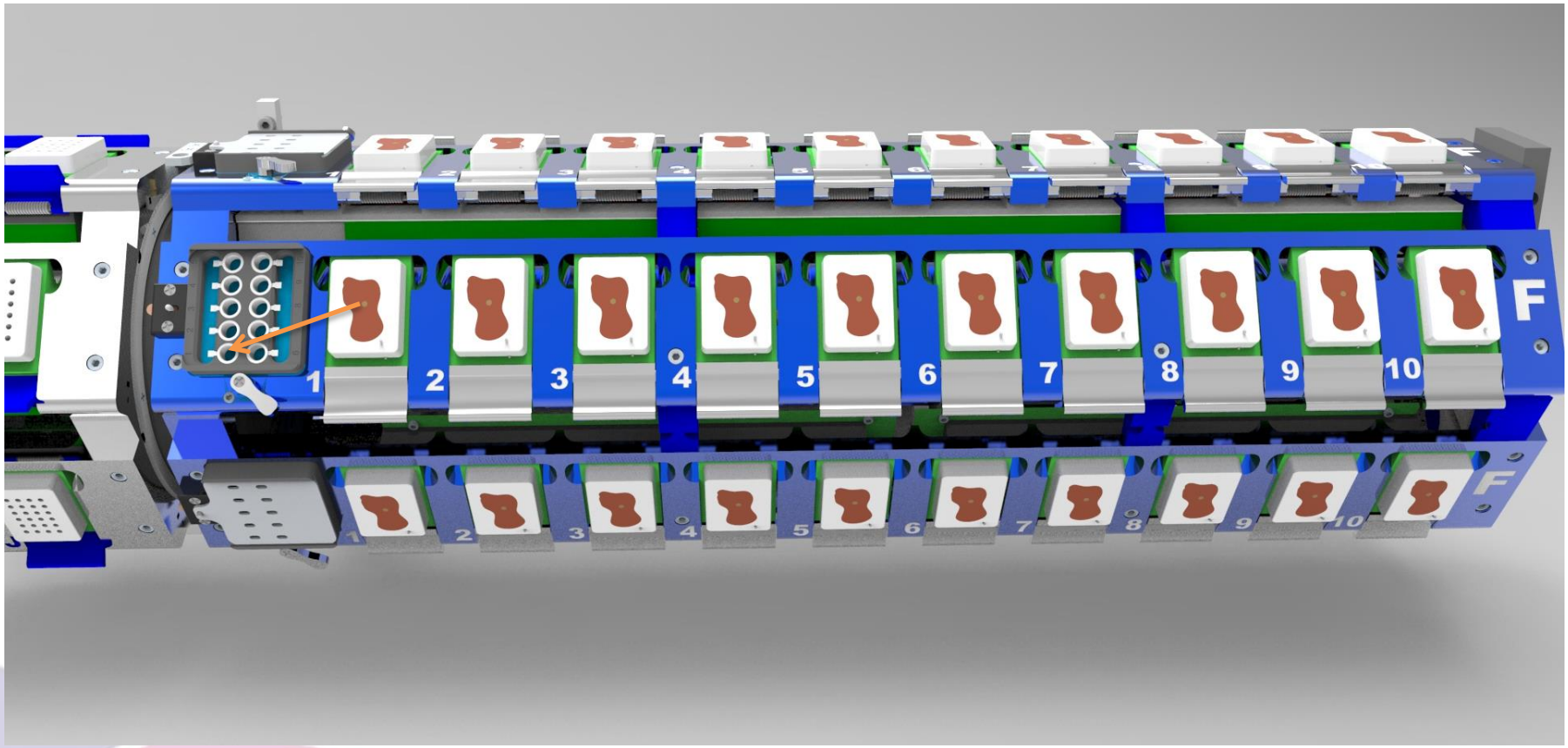
- **1D Barcode Types**
  - Code 128, Code 93, EAN8, EAN13, UPC_A

- **2D Barcode Types**
  - Datamatrix, Maxicode, Micropdf417, QRcode



PCR in Grand Master

- **Dedicated position**



Cleaning block

- **Set the cleaning block**
- **Clean before each PCR extraction**