

Assay portfolio of the Center for Molecular Pathology

Institute of Pathology Heidelberg (IPH), University Hospital Heidelberg

I. Oncological Diagnostics

A) Focused Next-Generation Sequencing

(Equipment: 2x IonTorrent PGM, 1x IonTorrent Proton)

All gene panels are established and validated on formalin-fixed and paraffin-embedded tissue. The panels are continuously updated according to the most recent diagnostic developments. The average TAT is 7 working days.

- **Comprehensive tumor panel 1** (Hotspot-regions in 50 genes, 207 amplicons)
- **Comprehensive tumor panel 2** (410 genes, 16.000 amplicons)
- **Tumor specific panels** for:
 - Colorectal Carcinoma
 - Head and neck cancer
 - Lung cancer including simultaneous detection of ALK/ROS1/RET and NTRK1 fusions
 - Breast cancer
 - Pancreatic carcinoma
 - Liver cancer (HCC and CC)
- **Aberration specific panels** for:
 - BRCA1/2
 - NTRK1-3 fusions

B) Sanger-/Pyro-Sequencing

Singular gene analysis:

- BRAF (Exon 15; V600)
- DDR2 (Exons 6, 9, 18)
- EGFR (Exons 18, 19, 20, 21)
- EML4-ALK (V1, V2, V3)
- GNA11 (Exon 5)
- GNAQ (Exon 5)
- GNAS1 (Exons 8, 9)
- KIT (Exons 9, 11, 13, 14, 17,18)
- K-RAS (Exons 2 – 4; Codons 12, 13, 59, 61, 117, 146)
- N-RAS (Exons 2 – 4; Codons 12, 13, 59, 61, 117, 146)
- PDGFR α (Exons 12, 18)
- PIK3CA (Exons 1, 5, 7, 9, 20)
- PTEN (Exons 1 – 9)
- RET (Exons 11, 16)
- β -Catenin (Exon 3, 7, 8)

Additional gene analysis on FFPE tissue can be established within two weeks.

C) *In situ* Hybridization (ISH)

Singular gene analysis:

- ALK split-FISH
- CD274 (PDCD1LG1, PDL1)-FISH
- CDK4-FISH
- CDKN2A (p16, ARF)-FISH
- EGFR-FISH
- ETV6 split-FISH
- FGFR1-FISH
- FGFR2 split FISH
- FGFR2-FISH
- FGFR3 split FISH
- HER2-CISH
- KRAS-FISH
- MAML2-split-FISH
- MDM2-CISH
- MET-FISH
- NUT-BRD4 Fusion-FISH
- PML-RARA Fusion-FISH
- RET-split-FISH
- ROS1-split- FISH

Additional gene analysis on FFPE tissue can be established within two weeks.

D) Diagnostic aberrations in soft tissue- and bone cancer

a. RT-PCR (fusions-transcript)

- ASPSCR1-TFE3 (alveolar soft tissue sarcoma)
- EWS-ATF1 (clear cell sarcoma)
- JAZF1-JJAZ1 (endometrial stromal sarcoma)
- PAX3/7-FKHR (alveolar rhabdomyosarcoma)
- SS18 (SYT)-SSX1/2/4 (synovial sarcoma)
- TLS/EWS-CHOP (myxoid/round cell liposarcoma)

b. In situ Hybridization (ISH)

- CHOP split-CISH (myxoid/round cell liposarcoma)
- EWS split-CISH (Ewing-Sarcoma, peripheral neuroectodermal tumor, clear cell sarcoma)
- EWS split-FISH (Ewing-Sarcoma, peripheral neuroectodermal tumor, clear cell sarcoma)
- FUS split-FISH (myxoid/round cell liposarcoma)
- NR4A3 split-FISH (extraskelletal myxoid chondrosarcoma)
- SYT split-CISH (synovial sarcoma)
- TFE3 split-FISH (alveolar soft tissue sarcoma)
- USP6 split-FISH (primary aneurysmal bone cyst)
- WT1 split-FISH (desmoplastic small-round-cell tumor, DSRCT)
- YWHAE split-FISH (endometrial stromal sarcoma)

II. Hematological Diagnostics

- API2-MALT1 [t(11;18)]
- BCR-ABL [t(9;22); without e19/a2]
- BCR-ABL fusion-FISH
- c-Myc-IGH fusion-FISH
- IgH-rearrangement (clonality analysis B-cell-lymphoma)
- JAK2 [c.1849G>T, p.V617F]
- TCRγ-rearrangement (clonality analysis T-cell-lymphoma)
- Zyklin D1-CISH

III. Infection Diagnostics

- Bartonella henselae
- Borrelia burgdorferi
- Epstein-Barr-Virus (EBV; PCR and *in situ* hybridization)
- Hepatitis-B-Virus (HBV)
- Hepatitis-C-Virus (HCV)
- Human Papilloma-Virus (HPV; Subtyping)
- Human Herpes-Simplex-Virus (HSV1 and 2)
- Human Herpes-Virus 8 (HHV8)
- Leishmania spp.
- Mycobacterium tuberculosis Complex
- Pan-Mycobacteria (HSP65-gene)
- Tropheryma whippelii
- Yersinia enterocolitica/pseudotuberculosis
- Cytomegalovirus (CMV)