

NTHRYS

OPC PVT LTD

SECTION • PNI

Protein–Nucleic Acid & Protein Interactions

Hands-on wet-lab training in mapping molecular interactions — protein–DNA and protein–RNA interaction analysis, biochemical protein–protein interactions, two-hybrid and genetic systems, biophysical interaction methods, and live-cell and proximity-based approaches.

06

CATEGORIES

30

PROTOCOLS

PNI

SECTION ID

2026

EDITION

Categories & Protocols

Section **PNI** spans 6 category streams and 30 bench protocols. Every protocol carries a unique code for enrolment, tracking and certification.

PNI-DN	Protein-DNA Interaction Analysis EMSA, footprinting & DNA-affinity pulldown	05
PNI-RN	Protein-RNA Interaction Analysis RNA EMSA, RIP, CLIP & aptamer selection	05
PNI-PP	Protein-Protein Interaction (Biochemical) Co-IP, pulldown, cross-linking & TAP	05
PNI-TH	Two-Hybrid & Genetic Interaction Systems Yeast, bacterial & mammalian two-hybrid screens	05
PNI-BP	Biophysical Interaction Methods SPR, ITC, BLI, MST & anisotropy	05
PNI-LV	Live-Cell & Proximity Methods FRET/BRET, BiFC, PLA & proximity labelling	05
TOTAL	All training protocols in section PNI	30

CODE FORMAT

PNI · PP · 01

PNI section

PP category

01 protocol

01

■ CATEGORY · PNI-DN

Protein-DNA Interaction Analysis

EMSA, footprinting & DNA-affinity pulldown

05

PROTOCOLS

CODE

TRAINING PROTOCOL

DESCRIPTION

PNI-DN-01

Electrophoretic Mobility Shift (EMSA)

Gel-shift binding detection.

PNI-DN-02

DNase I Footprinting

Binding-site mapping.

PNI-DN-03

ChIP for Interaction Mapping

In vivo occupancy capture.

PNI-DN-04

DNA-Affinity Pulldown

Sequence-bait protein capture.

PNI-DN-05

Reporter-Based Binding Assays

Functional binding readout.

02

CATEGORY • PNI-RN

Protein-RNA Interaction Analysis

RNA EMSA, RIP, CLIP & aptamer selection

05

PROTOCOLS

CODE

TRAINING PROTOCOL

DESCRIPTION

PNI-RN-01

RNA EMSA

RNA-protein gel-shift.

PNI-RN-02

RNA Immunoprecipitation
(RIP)

Bound-RNA capture.

PNI-RN-03

CLIP / eCLIP

Crosslink binding-site mapping.

PNI-RN-04

RNA Pulldown

RNA-bait protein capture.

PNI-RN-05

SELEX / Aptamer Selection

In vitro binder evolution.



■ CATEGORY · PNI-PP

Protein-Protein Interaction (Biochemical)

Co-IP, pulldown, cross-linking & TAP



PROTOCOLS

CODE

TRAINING PROTOCOL

DESCRIPTION

PNI-PP-01

**Co-Immunoprecipitation
(Co-IP)**

Antibody-based complex capture.

PNI-PP-02

GST / His Pulldown

Tag-bait interaction capture.

PNI-PP-03

Cross-Linking Studies

Stabilising transient complexes.

PNI-PP-04

**Tandem Affinity Purification
(TAP)**

Two-step complex isolation.

PNI-PP-05

Far-Western Blotting

On-membrane interaction probing.

04

■ CATEGORY · PNI-TH

Two-Hybrid & Genetic Interaction Systems

Yeast, bacterial & mammalian two-hybrid screens

05

PROTOCOLS

CODE

TRAINING PROTOCOL

DESCRIPTION

PNI-TH-01

Yeast Two-Hybrid (Y2H)

Nuclear-reconstitution assay.

PNI-TH-02

Bacterial Two-Hybrid

Prokaryotic interaction assay.

PNI-TH-03

Mammalian Two-Hybrid

In-context interaction assay.

PNI-TH-04

Library Screening for Interactors

Prey-library partner discovery.

PNI-TH-05

Interaction Validation

Orthogonal confirmation.



■ CATEGORY · PNI-BP

Biophysical Interaction Methods

SPR, ITC, BLI, MST & anisotropy



PROTOCOLS

CODE

TRAINING PROTOCOL

DESCRIPTION

PNI-BP-01

Surface Plasmon Resonance (SPR)

Real-time kinetics & affinity.

PNI-BP-02

Isothermal Titration Calorimetry (ITC)

Thermodynamic binding.

PNI-BP-03

Bio-Layer Interferometry (BLI)

Label-free kinetics.

PNI-BP-04

Microscale Thermophoresis (MST)

Solution-phase affinity.

PNI-BP-05

Fluorescence Anisotropy

Polarisation-based binding.



■ CATEGORY · PNI-LV

Live-Cell & Proximity Methods

FRET/BRET, BiFC, PLA & proximity labelling



PROTOCOLS

CODE

TRAINING PROTOCOL

DESCRIPTION

PNI-LV-01

FRET / BRET Interaction

Energy-transfer proximity.

PNI-LV-02

**Bimolecular Fluorescence
Complementation**

Split-fluorophore assay.

PNI-LV-03

**Proximity Ligation Assay
(PLA)**

In situ interaction detection.

PNI-LV-04

**Biold / APEX Proximity
Labelling**

Neighbourhood mapping.

PNI-LV-05

**Split-Reporter
Complementation**

Reconstituted-reporter readout.

Map molecular interactions

Every protocol in Section PNI is delivered as hands-on bench training — from EMSA, footprinting and Co-IP through two-hybrid screens, SPR / ITC biophysics and live-cell proximity methods. Function emerges from interactions, and these methods make those contacts visible and quantifiable.

30 protocols

6 categories

PNI section

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