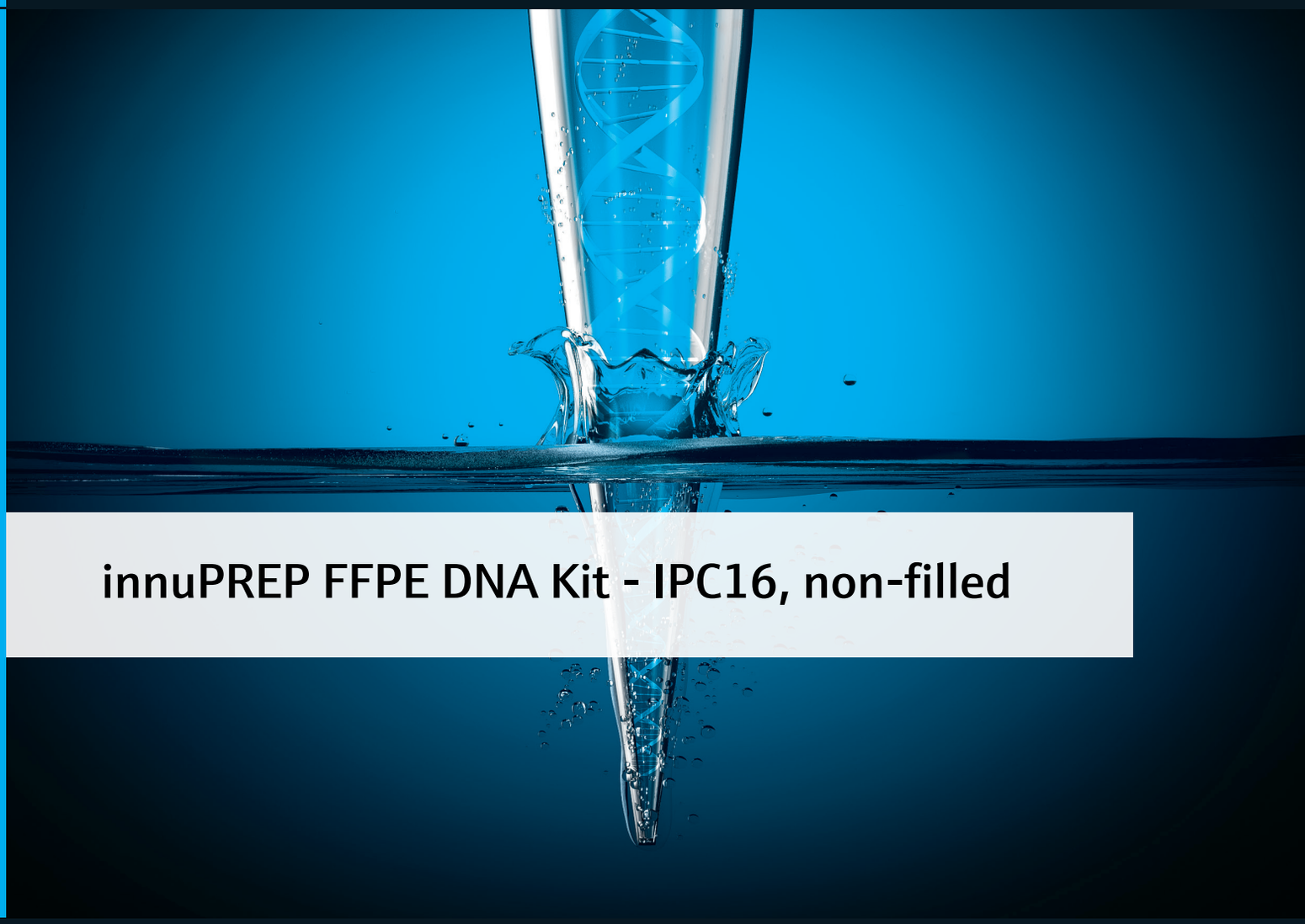
Instructions for Use
Life Science Kits & Assays



innuPREP FFPE DNA Kit - IPC16, non-filled

Innuscreen GmbH

Order No.:

845-PPP-5916016 16 reactions
845-PPP-5916096 96 reactions
845-PPP-5916480 480 reactions

Publication No.: HB_PPP-5916_e_230213

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Contents

1 Introduction

1.1 Intended use

The **innuPREP FFPE DNA Kit – IPC16, non-filled** has been designed for automated isolation of genomic DNA from formalin-fixed, paraffin-embedded (FFPE) samples using the InnuPure C16 / C16 *touch*. The extraction procedure is based on a new patented chemistry.

The procedure starts with an external lysis step without the need for toxic and hazardous components like octane or xylene for deparaffinization. After the external lysis and incubation step, the MAG Suspension F and the samples are transferred to the Reagent Plate of the kit. This plate must be prefilled with all reagents needed for the extraction process. The extraction procedure runs automatically on the InnuPure C16 / C16 *touch*. The extraction is based on binding of DNA to surface-modified magnetic particles. After several washing steps, the nucleic acids are eluted from the magnetic particles with RNase-free water and are ready to be used in downstream applications. The extraction chemistry in combination with the InnuPure C16 / C16 *touch* protocol is optimized to get maximum yield and quality.

CONSULT INSTRUCTIONS FOR USE

This package insert must be read carefully before use. Package insert instructions must be followed accordingly. Reliability of results cannot be guaranteed if there are any deviations from the instructions in this package insert.

1.2 Notes on the use of this manual and the kit

For easy reference and orientation, the manual and labels use the following warning and information symbols as well as the shown methodology:

Symbol	Information
REF	**REF** Catalogue number.
Σ N	**Content** Contains sufficient reagents for <N> tests.
15 °C 30 °C	**Storage conditions** Store at room temperature, unless otherwise specified.
	Consult instructions for use This information must be observed to avoid improper use of the kit and the kit components.
	Expiry date
LOT	**Lot number** The number of the kit charge.
	Manufactured by Contact information of manufacturer.
	For single use only This kit is made for single use only.
	Note / Attention Observe the notes marked in this way to ensure correct function of the device and to avoid operating errors for obtaining correct results.

The following systematic approach is introduced in the manual:

- The chapters and figures are numbered consecutively.
- A cross reference is indicated with an arrow (e.g. → "Notes on the use of this manual", p. 3).
- Working steps are numbered.

2 Safety precautions

NOTE
Read through this chapter carefully before use to guarantee your own safety and a trouble-free operation.
Follow all the safety instructions explained in the manual, as well as all messages and information.

All due care and attention should be exercised in handling the materials and reagents contained in the kit. Always wear gloves while handling these reagents and avoid any skin contact! In case of contact, flush eyes or skin with a large amount of water immediately.

FOR SINGLE USE ONLY!
This kit is made for single use only!

ATTENTION!
Do not eat or drink components of the kit!
The kit shall only be handled by educated personnel in a laboratory environment!

If the buffer bottles are damaged or leaking, wear gloves and protective goggles when discarding the bottles in order to avoid any injuries. IST Innuscreen GmbH has not tested the liquid waste generated during usage of the kit for potential residual infectious components. This case is highly unlikely but cannot be excluded completely. Therefore, all liquid waste must be considered as potentially infectious and must be handled and discarded according to local safety regulations.

Please observe the federal, state and local safety and environmental regulations. Follow the usual precautions for applications using extracted nucleic acids. All materials and reagents used for DNA or RNA isolation should be free of DNases or RNases.

ATTENTION!

Do not add bleach or acidic components to the waste after sample preparation!

NOTE

Emergency medical information in English and German can be obtained 24 hours a day from:

Poison Information Center, Freiburg / Germany

Phone: +49 (0)761 19 240.

For more information on the GHS classification and the Safety Data Sheet (SDS) please contact sds.innu@ist-ag.com.

3 Storage conditions

The kit is shipped at ambient temperature.

Upon arrival, store lyophilized and dissolved **Proteinase K** and **MAG Suspension F** at 4 °C to 8 °C.

All other components of the **innuPREP FFPE DNA Kit – IPC16, non-filled** should be stored dry at room temperature (15 °C to 30 °C). When stored at room temperature, the kit is stable until the expiration date printed on the label on the kit box.

Before every use make sure that all components are at room temperature. If there are any precipitates within the provided solutions, they can be dissolved by careful warming.

4 Functional testing and technical assistance

The IST Innuscreen GmbH guarantees the correct function of the kit for applications as described in this manual. This product has been produced in an ISO 13485 certified facility.

We reserve the right to change or modify our products to enhance their performance and design. If you have any questions or problems regarding any aspects of the **innuPREP FFPE DNA Kit – IPC16, non-filled** or other IST Innuscreen GmbH products, please do not hesitate to contact us.

For technical support or further information in Germany please contact info.innu@ist-ag.com. For other countries please contact your local distributor.

5 Product use and warranty

The kit is not designed for the usage of other starting materials or other amounts of starting materials than those, referred to in this manual (→ “Intended use”, p. 2) (→ “Product specifications”, p. 10). Since the performance characteristics of IST Innuscreen GmbH kits have only been validated for the application described above, the user is responsible for the validation of the performance of IST Innuscreen GmbH kits using other protocols than those described below. IST Innuscreen GmbH kits may be used in clinical diagnostic laboratory systems after the laboratory has validated the complete diagnostic system as required by CLIA ‘88 regulations in the U.S. or equivalent regulations required in other countries.

All products sold by the IST Innuscreen GmbH are subjected to extensive quality control procedures and are warranted to perform as described when used correctly. Any problems should be reported immediately.

6 Kit components

6.1 Components included in the kit

	Σ 16	Σ 96	Σ 480
REF	845-PPP-5916016	845-PPP-5916096	845-PPP-5916480
MAG Suspension F	0.25 ml	1.1 ml	5 × 1.1 ml
Lysis Solution BC	2 × 2 ml	2 × 12 ml	2 × 60 ml
Solution QPS	2 × 2 ml	25 ml	2 × 60 ml
Proteinase K	For 3 × 0.3 ml working solution	For 3 × 1.5 ml working solution	For 13 × 1.5 ml working solution
Deep Well Plate (2.0 ml)	2 (empty)	12 (empty)	60 (empty)
RNase free Water	30 ml	2 x100 ml	4 x 200 ml
Binding Solution SBS	2 x 5 ml	60 ml	4 x 70 ml
Washing Solution C	2 x 8 ml	2 x 30 ml	4 x 80 ml
Washing Solution LS (conc.)	5 ml (for 25 ml working solution)	25 ml (for 125 ml working solution)	130 ml (for 650 ml working solution)
Filter Tips	2 × 16	2 × 96	10 × 96
Elution Tubes (0.65 ml)	16	2 × 48	10 × 48
Elution Caps (Stripes)	2	12	5 × 12
Elution Strips	**2**	**12**	5 × 12
Manual	1	1	1

6.2 Components not included in the kit

- 96 %–99.8 % Ethanol (molecular biology grade, undenatured)
- 1.5 ml tubes
- 2.0 ml tubes
- ddH_2O for dissolving **Proteinase K**

6.3 Related Products

- Deep Well Plate (96 square well, 2.0 ml 845-FX-8500025, 25 pcs)
- Deep Well Plate (96 square well, 2.0 ml 845-FX-8500115, 115 pcs)
- IPC16 Dummy Plate (sealed, 31-00258, 1 piece)

7 Initial steps before starting

- Add the indicated amount of ddH_2O to **Proteinase K**, mix thoroughly and store as described above.

845-PPP-5916016	Add 0.3 ml ddH_2O to lyophilized Proteinase K.
845-PPP-5916096 845-PPP-5916480	Add 1.5 ml ddH_2O to lyophilized Proteinase K.

- Add the indicated amount of absolute ethanol to **Washing Solution LS** and mix thoroughly. Always keep the bottle firmly closed!

845-PPP-5916016	Add 20 ml of **96-99.8 % ethanol** to 5 ml **Washing Solution LS (conc.)**
845-PPP-5916096	Add 100 ml of **96-99.8 % ethanol** to 25 ml **Washing Solution LS (conc.)**
845-PPP-5916480	Add 520 ml of **96-99.8 % ethanol** to 130 ml **Washing Solution LS (conc.)**

- Pre-heat two thermal mixers or water baths to 65 °C and 90 °C, respectively.
- Centrifugation steps should be carried out at room temperature.

8 Product specifications

1. Starting material:
   - FFPE tissue samples
   - Size: approx. 2 × 5 µm; optionally more starting material

2. Time for isolation:

   Preliminary steps: approx. 3.75 hours

Extraction protocol	Protocol on InnuPure C16 / C16 touch	Time on InnuPure C16 / C16 touch	Elution volume
Ext_Lysis_200_C16_04/ External Lysis 200µl – 05	200 µl	55 / 52 min	20–500 µl
Ext_Lysis_200_Fast_C16_04/ External Lysis 200µl – Fast – 05	200 µl	43 / 41 min	20–500 µl

3. Typical yield:
   - Depending on amount and quality of starting material.

9 Protocol: Lysis of FFPE tissue samples

NOTE
The lysis of the starting material is a preliminary manual step. Pre-heat two thermal mixers or water baths to 65 °C and 90 °C, respectively.

1. Place the FFPE tissue sample (approx. 2x 5 µm or 1x 10 µm; optionally more starting material may be used) into a 2.0 ml reaction tube, close the cap and centrifuge the reaction tube at max. speed for 1 minute.
2. Open the reaction tube and add **200 µl Lysis Solution BC** and **40 µl Proteinase K** to the sample and mix vigorously by pulsed vortexing for 10 seconds. Centrifuge briefly to remove drops from the lid of the tube.

NOTE
The FFPE tissue sample has to be completely covered by **Lysis Solution BC**!

3. Incubate the reaction tube at 65 °C for 2.5 hours in a thermal mixer under continuous shaking at 1,000 rpm.

NOTE
Overnight incubation at 65 °C may increase the DNA yield. However, for most types of FFPE tissue sample the incubation at 65 °C for 2.5 hours is sufficient.

We recommend using a shaking platform (thermomixer, water bath or another rocking platform) for a continuous shaking of the sample. Vortex the sample optionally during incubation.

4. After the lysis step place the sample into a second thermal mixer pre-heated to 90 °C and incubate the sample for 1 hour.

NOTE
Do not place the sample into the thermal mixer, before the temperature of 90 °C is reached!

We recommend using a shaking platform (thermomixer, water bath or another rocking platform) for a continuous shaking of the sample. Vortex the sample optionally during incubation.

5. Open the reaction tube and add **200 µl Solution QPS** to the sample, mix vigorously by pulsed vortexing for 5 seconds.
6. Centrifuge the reaction tube at max. speed for 1 minute.
7. Proceed with the automated extraction (→ "Preparation of the Reagent Plate", p. 13).

NOTE
If there is a thin film of paraffin on top of the sample, pierce this film carefully with a pipette and carefully remove the sample.

10 Preparation of the Reagent Plate

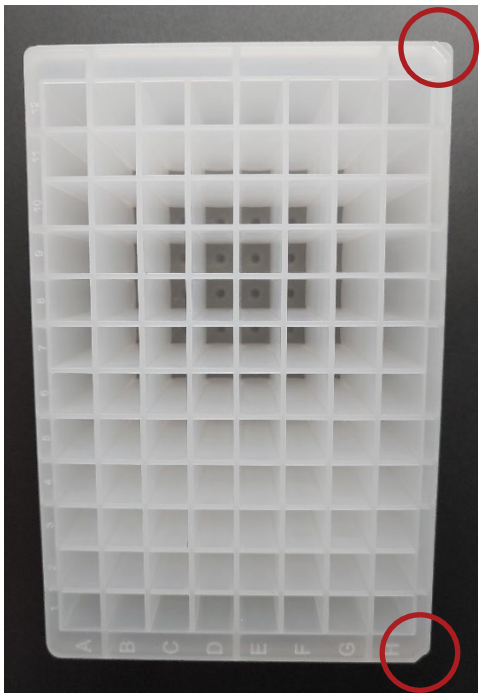
10.1 Prefilling of the Reagent Plate

NOTE

The Deep Well Plates must be filled manually prior to the automated extraction procedure.

Take care to fill the plates in the correct orientation: Engraved numbers do not coincide with row numbers quoted in the table below!

1. Place the Deep Well Plates in such a way, that the notched corners are facing to the right (see picture below).
2. In this orientation the upper row is row number 1.
3. Fill each cavity of a row with the indicated volume of the solution specified in the table (e.g. fill each of the eight cavities of row 1 with 940 µl of RNase-free water) and also add **MAG Suspension F** and **Sample** as described in 10.2 (“Loading the sample to Reagent Plate”, p. 14).

Deep Well Plate	Row No.	Solution	Volume per cavity
	1	RNase-free Water	940 µl
	2	empty	---
	3	empty	---
	4	empty	---
	5	empty	---
	6	Binding Solution SBS	500 µl
	7	Washing Solution C	600 µl
	8	Washing Solution LS	600 µl
	9	Washing Solution LS	600 µl
	10	96 %–99.8 % Ethanol	600 µl
	11	empty	---
	12	RNase-free Water	600 µl

10.2 Loading the sample into the Reagent Plate

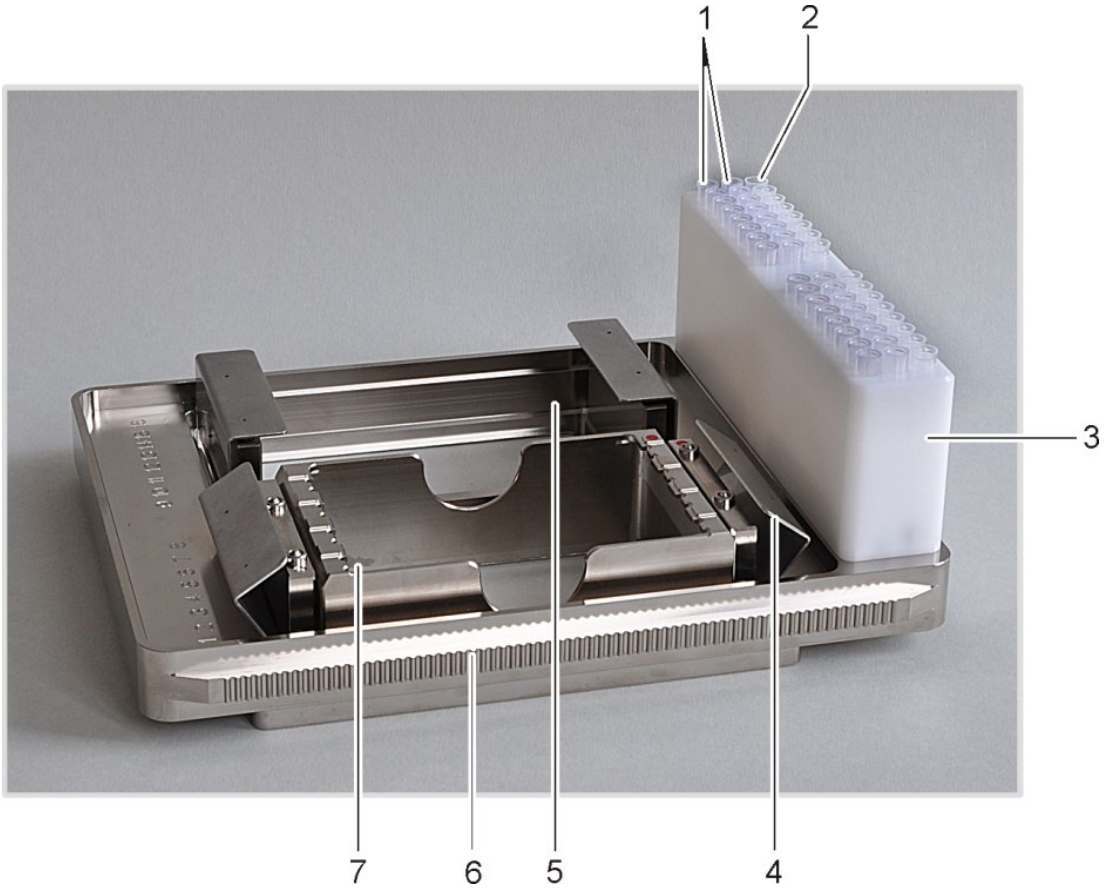
NOTE
It is important to mix the **MAG Suspension F** by vigorous shaking or vortexing before use (approx. 30 seconds)!

1. Transfer **10 µl** of **MAG Suspension F** directly into the liquid of the **first cavity** of Reagent Plate.
2. Transfer **400 µl** of the **lysed sample** into the **third cavity** of Reagent Plate. Avoid carry-over of residual FFPE material!

NOTE
The sample will be processed using the InnuPure C16 / C16 *touch*. Please follow the instructions of chapter 11 ("Automated extraction using InnuPure C16 / C16 *touch*", p. 15).

11 Automated extraction using InnuPure C16 / C16 touch

11.1 Sample tray of InnuPure C16 / C16 touch



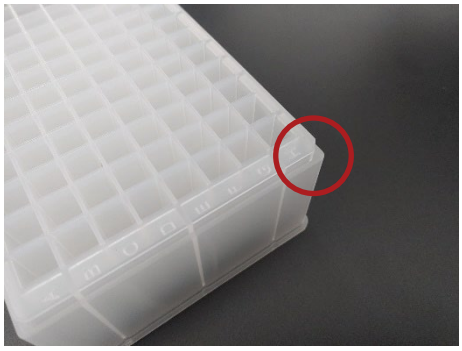
No. 1:	Filter tips
No. 2:	Elution vessels for purified samples
No. 3:	Tip block
No. 4:	Holding-down clamp
No. 5:	Sample block for Reagent Plates or adapter for Reagent strips
No. 6:	Serrated guide rail (C16 *touch*: non-serrated)
No. 7:	Adapter for Reagent Strips

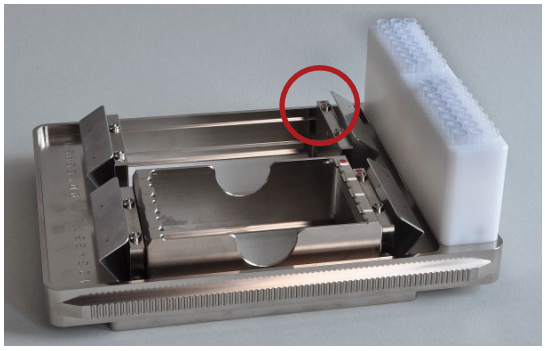
11.2 Preparing sample tray of InnuPure C16 / C16 touch

1. Place the InnuPure C16 / C16 *touch* sample tray into the priming station and open the holding-down clamp of the sample tray!
2. Place the Reagent Plate into the holder of the sample tray. The notched corner of the Reagent Plate has to align with the colored dot at the holder.

Reagent Plate

The notched corners of the Reagent Plate must point to the colored dot on the holder.





CAUTION

Both holders have to be equipped with a Reagent Plate. If applicable, use an empty or dummy plate for the respective holder.

3. Close the holding-down clamps to prevent the Reagent Plates from being pulled out of the holder during the extraction process.
4. For each extracted sample place two filter tips in the smaller holes of the tip block.
5. Place the Elution Tubes into the wider holes at the edge of the tip block. Empty sample positions do not need to be filled.

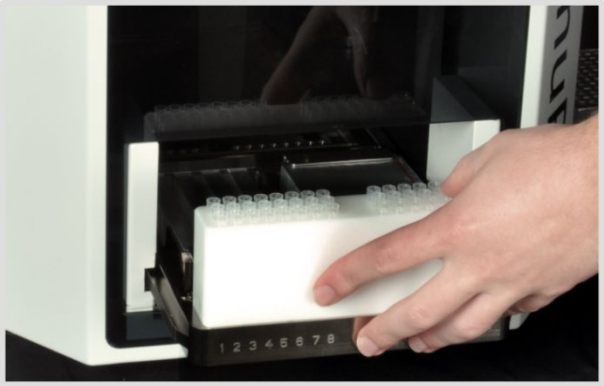
NOTE

Make sure that for every sample the tips and the elution vessel are in the corresponding positions in the tip block!

IMPORTANT NOTE
It is possible to select between two different elution vessels! For small elution volumes up to 200 µl use Elution Strips (0.2 ml). For high elution volumes up to 500 µl use Elution Tubes (0.65 ml) with corresponding Elution Caps (Stripes).

11.3 Starting the InnuPure C16

1. Switch on the InnuPure C16 and wait for the device initialization to complete, which is signaled by a beeping sound.
2. Move the loaded sample tray with the Reagent Plates forward into the sample tray adapter on the front of the InnuPure C16. The serrated rails at the side of the sample tray must protrude into the grooves of the adapter. After pressing lightly against the tip block the sample tray is automatically pulled into the device.



IMPORTANT – CAUTION

Risk of injury

Immediately let go of the sample tray once it is being pulled in. Otherwise there is a risk of your hand being injured.

3. After pressing [Select Protocol] choose an appropriate extraction protocol on InnuPure C16 and press [Start]:

Extraction procedure	Protocol on InnuPure C16
Standard (maximum yield, approx. 55 minutes)	Ext_Lysis_200_C16_04
Fast (time-optimized, approx. 43 minutes)	Ext_Lysis_200_Fast_C16_04

4. Enter the recommended **elution Volume** of **100 µl** and press [OK].

NOTE
It is possible to adjust the volume values from 20 µl to 500 µl.

5. If needed, choose log-file and enter sample IDs, press [OK] or [CANCEL].

NOTE
It is possible to enter sample IDs and to create a run logfile. Find more detailed information on how to start an extraction protocol using InnuPure C16 on page 37 of the user manual (→ “6.3.5 Using the sample setup tool”)!

6. After completion of the protocol press [NEXT]. The sample tray will be moved out of the device.

NOTE
The chosen protocol is performed by the device. After the protocol is finished, the tray with the purified samples will be moved out of the device upon pressing [NEXT]. The message “Program finished” will be displayed on the screen of the device!

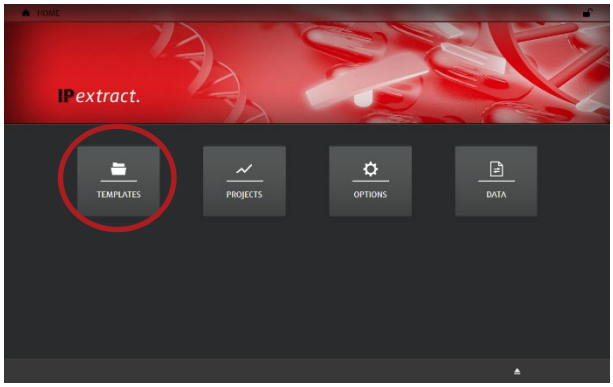
7. Remove the sample tray from the adapter of the InnuPure C16 and place it back into the priming station.
8. After finishing the extraction protocol, the Elution Tubes contain the extracted DNA. Close the lids and store the DNA under proper conditions.

NOTE
Store DNA under adequate conditions. We recommend storing extracted DNA at -22 °C to -18 °C!

11.4 Starting the InnuPure C16 touch

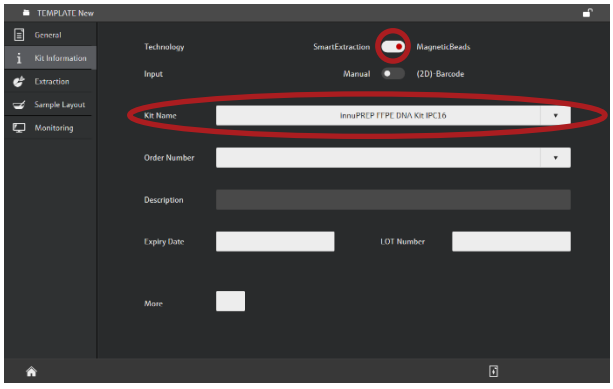
NOTE
The following instructions describe the necessary steps for the start of the InnuPure C16 *touch*. For further features and data entry (e.g. opening templates, entering sample setups, saving projects) refer to the manual of the InnuPure C16 *touch*.

1. Switch on the InnuPure C16 *touch* and the tablet computer. Wait until the home screen of IP*extract* is displayed on the tablet screen.



NOTE
Home screen of IP*extract*

2. Choose [TEMPLATES]→[New Template]→[Kit-based].
3. Enter optional information in the tab “General”.
4. Choose the tab “Kit Information” and switch the “Technology” to “MagneticBeads”.
5. Choose your desired kit from the drop-down list “Kit Name”.



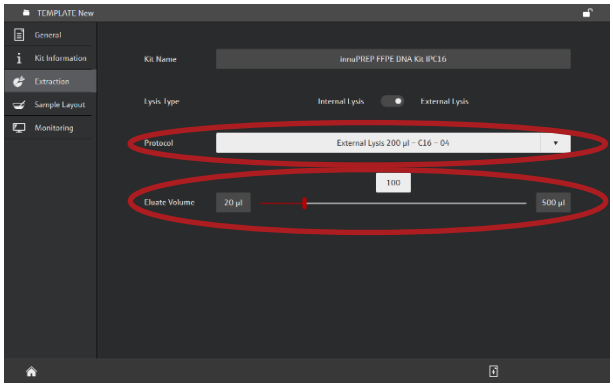
NOTE
“Kit Information” tab

6. Enter optional information in the tab “Kit Information”.

7. Choose the tab “Extraction” and choose the desired “Protocol”.

Extraction procedure	Protocol on InnuPure C16 touch
Standard (maximum yield, approx. 52 minutes)	External Lysis 200 µl - 05
Fast (time-optimized, approx. 41 minutes)	External Lysis 200 µl - Fast - 05

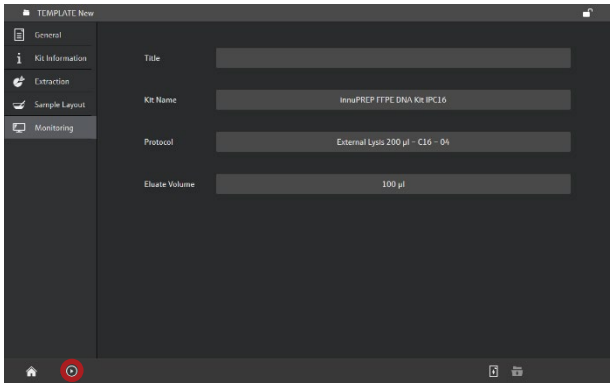
8. Adjust your desired “Eluate Volume“ using the slider or the text field.



NOTE
“Extraction” tab

The recommended elution volume is 100 µl.

9. Choose the tab “Monitoring” and start the protocol by tapping the start button.



NOTE
“Monitoring” tab

10. Follow the instructions displayed on the tablet screen.

11. After loading the tray into the device, a message appears reminding you that all cavities must be open before starting. If you have closed the Reagent Plates with a foil, please remove it.

    Please ignore the message if you have not sealed the Reagent Plates. The message must still be confirmed for the protocol start.

12. Completion of the protocol is indicated by a message on the tablet screen. Follow the instructions on the screen to remove the sample tray from the device.
13. The Elution Tubes contain the extracted DNA. Close the lids and store the DNA under proper conditions.

NOTE
Store the DNA under adequate conditions. We recommend storing the extracted DNA at -22 °C to -18 °C!

12 Troubleshooting

Problem / probable cause	Comments and suggestions
Low amount of extracted genomic DNA	
No extracted DNA	No magnetic beads added to cavity 1. Please add **10 µl MAG Suspension F to cavity 1** prior the extraction procedure. Ensure **Mag Suspension F** was mixed well before use.
Poor quality of extracted DNA	Avoid carryover of residual FFPE material when transferring the lysed sample to cavity 3 of the Reagent Plate.
Insufficient lysis of starting material	Perform lysis at 65 °C for at least 2.5 hours. Ensure to use the required volume of **Proteinase K** and **Lysis Solution BC**.
Elution volume too high	Decrease the elution volume. The suggested elution volume is 100 µl. Please note that lowering the elution volume will not necessarily increase the yield proportionally!

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