Imbian

# Development and production of immunochips

for the diagnosis of various human diseases

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# Multifunctional immunodiagnostics

Multiplex immunodiagnostics is a new direction of enzyme immunoassay, in which special “immunochip” protein matrices are used, which allows to identify simultaneously many different analytes in the sample under study.

Multiplex analyses require less time, reagents and sample volume. They are more informative and cost effective compared to monospecific tests.


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# Immunochip

Immunochip is a medical device for in-vitro diagnostics, intended for the simultaneous detection of antibodies and antigens to pathogens of various infections in human blood serum and plasma.



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# Benefits

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Autonomous Imbian immunochip kits for multiplex analysis were created using a unique patented technology. They have several advantages over other diagnostic methods:

01

## Diversity

i.e. the ability to detect up to 10 markers in a single test sample

02

## High accuracy

confirmed sensitivity and specificity at the level of classical ELISA, and the presence of built-in controls allows the user to verify the reliability of the results

03

## Easy to use

the analysis procedure does not require a highly skilled operator

04

## Autonomy

the kit completeness and analysis without additional equipment and power consumption



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# Benefits

05

## Low cost

the average cost of determining antibodies to a single infection is two times lower than that of a classical enzyme immunoassay

06

## Speed

a full comprehensive study lasting for 35 to 75 minutes

07

## Informativity

the possibility of both visual and semi-quantitative instrumental record of results

08

## Flexibility

the ability to perform both individual and group analyses



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# Kit composition

The multi-cell analytical bath is made of inert plastic, filled with ready-to-use solutions and sealed with foiled material. The bath combines 5 modules for individual tests with a set of 9 to 12 cells (depending on the design and analysis tasks)



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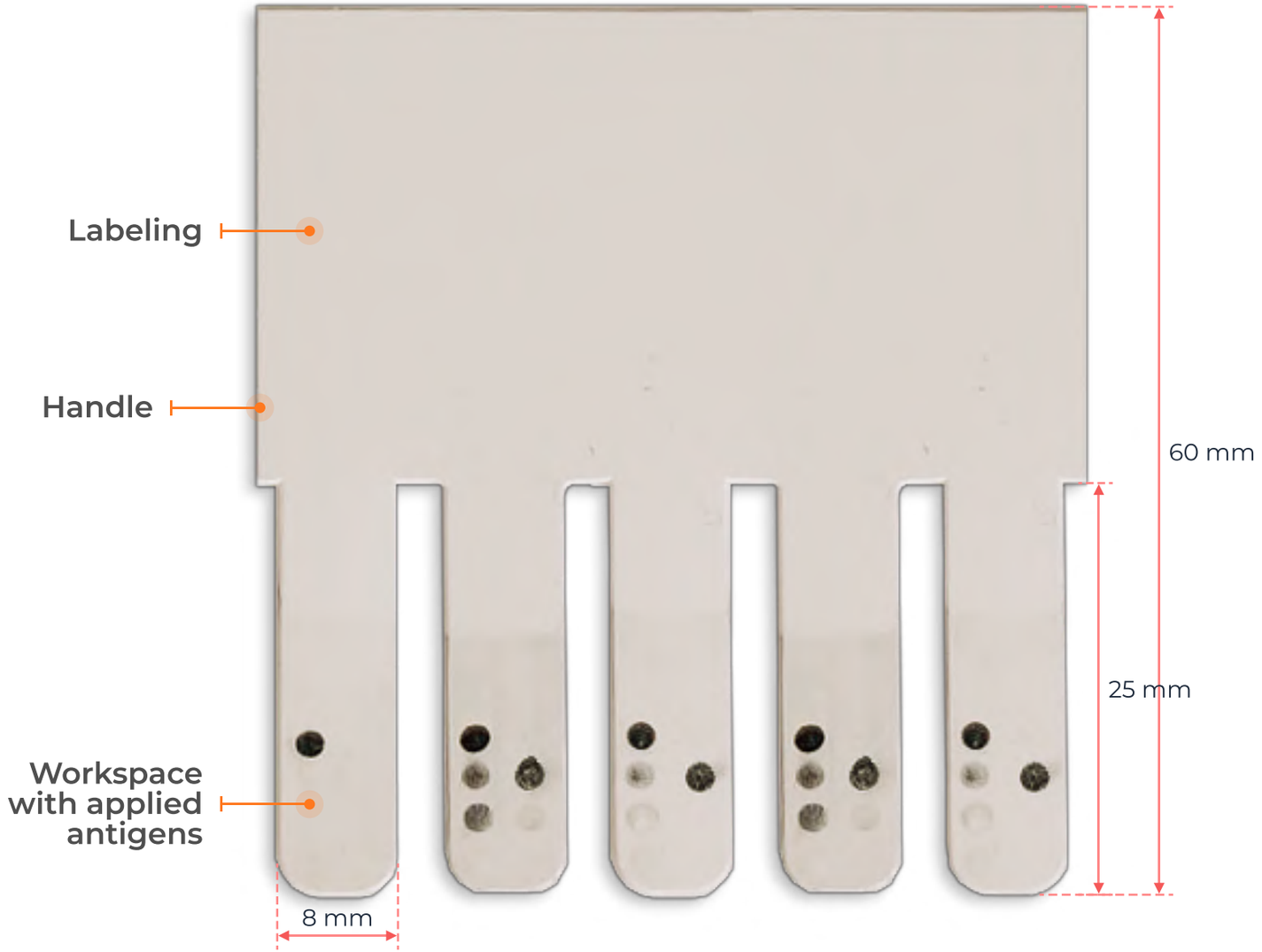
# Kit composition

The immunochip comb is a plastic substrate with discretely applied antigens.
The main advantage of this approach is the ability to examine a patient for infections that cause similar symptoms of the disease, using one analysis.





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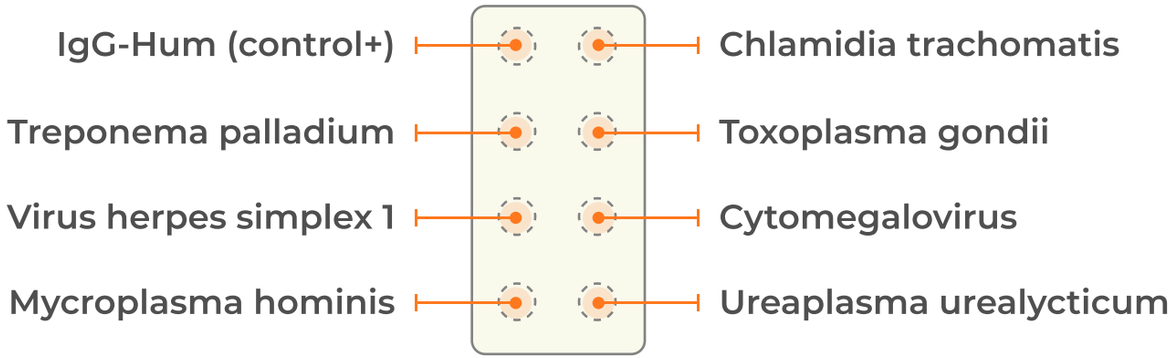
# Example of immunochip comb

## for multifunctionalanalysis of antibodies to pathogens of TORCH infections




## Examples of multifunctionalanalysis results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# Application process

The process of applying the kit is simple and does not require highly qualified personnel. The total analysis time takes from 35 to 75 minutes, depending on the immunochip kit used.
Each patient is tested using one comb strip and one bath column.

01

First, pierce the foil with a perforator and inject the blood serum or plasma into the cells of the first row.

02

Then immerse the set of combs in the cells of the first row.

03

The further testing process consists of successive movements of the comb along the rows of the bath.

04

In each row, the comb is kept for a certain time interval.


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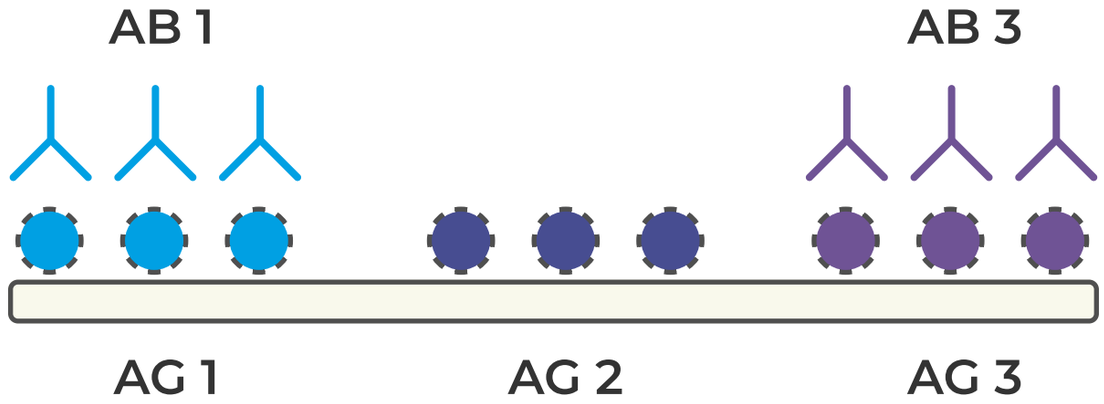
# Chemical process description
# Stage 1

## Incubation with serum under study

Specific antibodies (AB) bind to the corresponding antigens (AG) immobilized on the substrate





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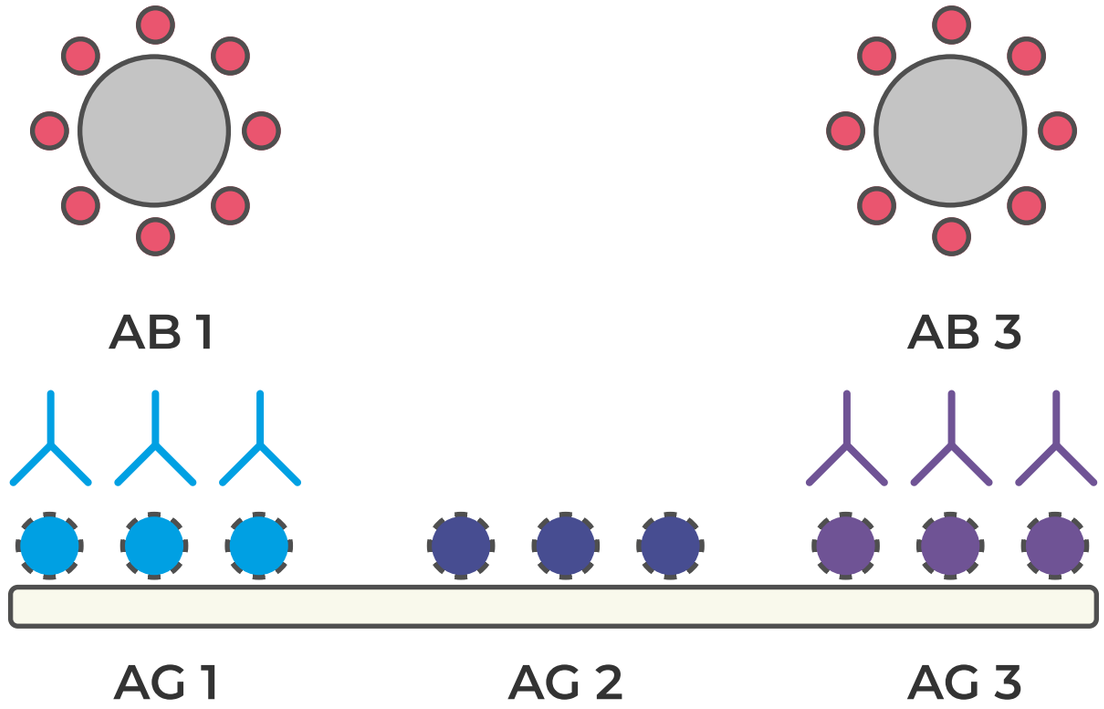
# Chemical process description Stage 2

## Incubation with immunosol

Sensitized colloidal gold binds to antibodies immobilized in the first stage.





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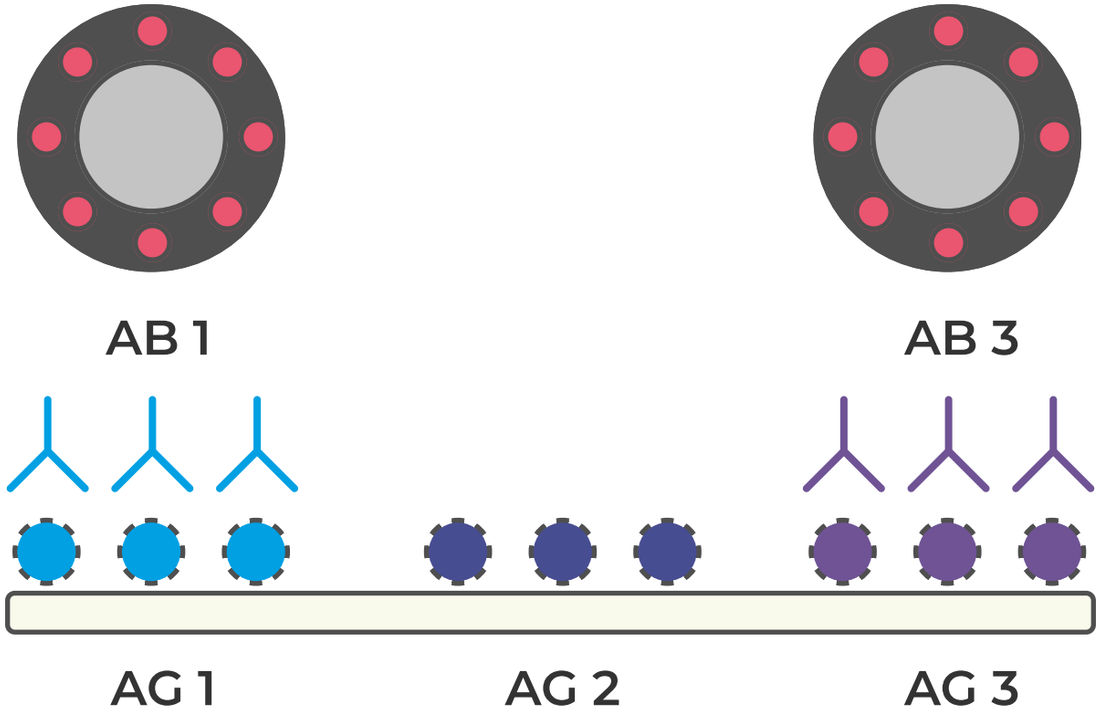
# Chemical process description Stage 3

## Development

Immobilized immunosol particles are covered by a layer of metallic silver from the physical developer solution





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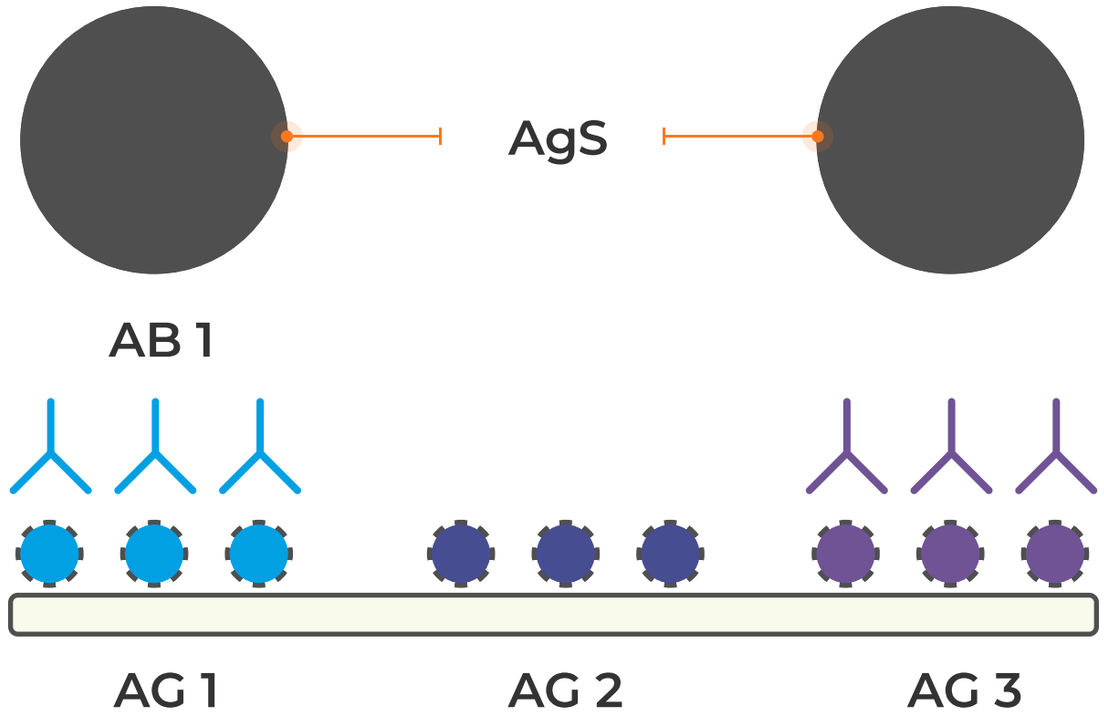
# Chemical process description Stage 4

## Color enhancement and stabilization

Silver recovered from the developer is treated with an alkaline solution of thiourea and is converted to intensely colored and chemically stable silver sulfide





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# Test results

01

## Test results are recorded

visually by the presence of dark spots in the places of application of certain antigens

02

## Semiquantitative recording

can be performed instrumentally by processing a matrix image digitized by a scanner with a specially developed computer program

03

## Developed combs

can be stored in a log between sheets of paper for an unlimited amount of time

04

## Each kit is designed

for 20 comprehensive studies and includes all the components necessary for testing


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# Imbian has developed several types of kits:

01

## BBI-spectrum-IgG-antibodies kit

The BBI-spectrum-IgG-antibodies kit of reagents is intended for the simultaneous detection of IgG class antibodies to the causative agents of the following blood-borne infections (BBI)in human serum (plasma):

- Syphilis (Treponema pallidum)
- HCV (Hepatitis C virus (HCV))
- HBV (Hepatitis B virus (HBV))
- HIV infection (Human immunodeficiency virus (HIV 1/2))
- Toxoplasmosis (Toxoplasma gondii) and CMV infection (Cytomegalovirus (CMV))

02

## BBI-spectrum kit

The BBI-spectrum kit of reagents is intended for the simultaneous detection of directive markers of the following blood-borne infections (BBI) in human serum (plasma):

- G-class antibodies to syphilis (Treponema pallidum)
- HCV (Hepatitis C virus (HCV))
- HIV infection (Human immunodeficiency virus (HIV 1/2))
- Hepatitis B virus antigens (HBsAg)
- Human immunodeficiency virus (HIV-1 p24)


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# Imbian has developed several types of kits:

03

## TORCH-spectrum kit

The TORCH-spectrum kit of reagents for the simultaneous detection of TORCHinfection complex markers by dot-immunoassay method is intended for the simultaneous detection of class G antibodies to the following pathogensin human serum (plasma):

- toxoplasmosis
- rubella
- cytomegalovirus infections
- herpes simplex virus 1/2

04

## DVI-IgG spectrum kit

The DVI - IgG spectrum kit of reagents for the simultaneous detection of antibodies of class G of children's vaccine-controlled infections in serum or plasma of human blood to pathogens:

- measles
- rubella
- mumps


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# 8 analyses on 1 immunochip within 1 hour

01

**High sensitivity**

02

**High specificity**

05

**Visual/instrumental recording**

03

**Easy analysis performance**

04

**Application in small labs**



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