

DNA model

LABOTRIX HELIX N1

PRODUCT PASSPORT

Kyiv

2026

1. Basic product information

- 1.1. Product name — DNA model.
- 1.2. Trademark — Labotrix.
- 1.3. Model — Helix N1; full trade name — LABOTRIX HELIX N1.
- 1.4. Manufacturer — Labotrix Group Limited, China.
- 1.5. Intended use: The product clearly reproduces the structure of the deoxyribonucleic acid (DNA) molecule and the principle of complementarity of nitrogenous bases. The model is used in secondary and higher education institutions in biology, genetics and molecular biology lessons when studying the topic "DNA Structure". Working with the model allows students to assemble a fragment of the molecule step by step, study the mutual arrangement of its components and learn the principle of self-duplication of hereditary material.
- 1.6. Design features: The model consists of colored elements - nitrogenous bases, phosphoric acid residues, deoxyribose and the central axis - which are connected to each other. The elements are made of high-quality and safe materials. Each element has its own color designation for easy recognition. The model rotates around the central axis, allowing you to view the double helix from all sides. The dimensions of the grooves are clearly displayed and ensure accurate connection of the components.

2. Technical specifications

- Brand — Labotrix
- Model — Helix N1
- The article number is LTX-HELIX-N1
- Product type — DNA demonstration model
- The number of nitrogenous base pairs in a fragment depends on the composition of the set.
- Element material - polysulfone, impact-resistant plastic
- Color marking is standard according to an internationally accepted standard
- Rotation capability - full axis of rotation
- Total height of the model when assembled is 90 cm
- Individual element sizes are optimized for display and handling
- Power — not required
- Operating conditions — premises of an educational institution, air temperature from +5 to +40 °C, relative humidity from 40 to 60 % without condensate
- Relative humidity (percent) — up to 80 % at a temperature of +25 °C
- Language of marking and operating documentation — Ukrainian
- Product marking — trademark, model and a space for the inventory number
- Packaging — individual box of corrugated cardboard with the contents secured

- Documentation supplied — product passport with warranty card and operating manual
- Installation method: on the biology classroom display table
- Organization of work - suitable for demonstration in class
- Educational support - the kit includes diagrams with element labels for self-assembly
- Service life (year) — 5
- Warranty period (month) — 12

3. Equipment

- Nitrogenous bases (adenine, thymine, cytosine, guanine) - according to the list on the packing slip
- Phosphoric acid residues (white elements) - according to the packing list
- Deoxyribose (pentose, red elements) — as listed on the packing list
- Central axis for rotating the model — 1 pc.
- Hydrogen bonds — by configuration
- Product Passport and Warranty Card — 1 pcs
- Individual transport packaging — 1 pcs

The model comes disassembled and ready to assemble. The kit includes diagrams with labels of the main elements to help students correctly identify the components and understand the molecular structure of DNA. The elements are packaged in a way that prevents the loss of small parts during transportation.

4. Safety measures

4.1. General requirements

- Please read this passport before first use and keep it with the product and proof of purchase.
- The model is used under the supervision of a teacher. Younger students work with the model only under the direct supervision of an adult.
- Check the unpacked kit for the presence of all elements according to the list on the packing list and for any visible damage.
- Before you start, read the diagrams and instructions on how to properly connect the elements.

4.2. Working with small elements

- The model contains small parts that are dangerous for children under three years of age. Adults should provide supervision and prevent children from eating the elements.
- While working, make sure that all elements are at a safe height and cannot fall on students.
- Do not leave the model unattended in areas where young children or pets can reach it.

- Do not throw model elements, do not knock them off the table, and do not attempt to use them as toys for other purposes.

4.3. Mechanical safety

- Handle the model with care when assembling and disassembling. The elements are connected tightly; do not apply excessive force when inserting parts into the grooves.
- If the element does not fit easily into the slot, check that it is oriented correctly before applying more force.
- Rotate the model smoothly and only around the central axis; do not try to bend the spiral or divide the model into arbitrary parts.
- Do not disassemble the model into separate colored components unless specifically instructed by the learning objective.

4.4. It is strictly forbidden

- Leave the model in places accessible to small children without constant adult supervision.
- Do not heat model elements, expose them to direct sunlight for long periods of time, or leave them near heat sources, as this may cause deformation.
- Immerse the model in water or clean with organic solvents.
- Try to re-glue or repair the model components yourself.
- Use the model as a mechanical toy or tool for other experiments.
- Throwing items, putting them in the mouth or throat, intentionally breaking or bending them.

5. Preparation for work

- 5.1. Unpack the kit on a clean, flat surface and check that all items are included as listed on the packing list.
- 5.2. Divide the elements into separate groups by color and arrange them so that all components are visible and easily accessible.
- 5.3. Familiarize yourself with the color coding scheme: adenine - light green, thymine - yellow, cytosine - orange, guanine - blue, phosphoric acid - white, deoxyribose - red, central axis - white.
- 5.4. Review the diagrams and accompanying documentation to understand the assembly sequence and the principle of complementarity.
- 5.5. If the model will be demonstrated in class, arrange all elements on the demonstration table so that they are visible to all students in the class.
- 5.6. Make sure you have enough time and space to assemble the model slowly without rushing and risking losing small parts.

6. Procedure

6.1. Assembly of a DNA molecule fragment

- Start from the central axis and add elements sequentially, following the principle of complementarity: adenine always pairs with thymine, cytosine with guanine.
- At each level, sequentially install the residues of phosphoric acid, then deoxyribose, and then nitrogenous bases.
- Make sure each element fits snugly into the slot, but without excessive force.

6.2. Double helix demonstration

- Once the basic structure is assembled, slowly rotate the model around the central axis, showing students the spiral structure.
- Notice how the nitrogenous bases are located on the inside of the helix, while the phosphoric acid and deoxyribose form a "sugar-phosphate backbone" on the outside.

6.3. Demonstration of complementarity

- Pointing to one of the nitrogenous bases on one chain, ask students to find its complementary partner on the opposite chain.
- Discuss how the principle of complementarity ensures accurate copying of genetic information during DNA replication.

6.4. Group research

- Give each group a separate set of elements and task them to assemble a small fragment of the molecule on their own.
- Ask students to name each element by color, identify nitrogenous bases, and discuss why the compounds between them form in the way they do.

6.5. Completion of work

- When the demonstration or experiment is complete, carefully disassemble the model, separating the elements by color.
- Pack all components into the container in the order in which they were packed during delivery.
- Make sure that no items are lost or left on the table.

7. Care, maintenance and possible malfunctions

7.1. Cleaning

- Wipe the model elements with a soft, dry cloth to remove dust.
- If it gets dirty, use a damp (but not too wet) soft cloth and wipe dry.
- Do not use abrasive materials, alcohol, acetone or harsh chemicals - they may discolor the elements.
- Dry the items naturally at room temperature; do not use a hair dryer, radiator or direct sunlight.

7.2. Periodic control

- Check every month for cracks, chips, or deformation of the elements.
- Check that all items are assembled together and packaged without damage.
- Make sure the center axle rotates freely and has no play.
- If damage is found, discontinue use and contact an authorized service center.

7.3. Possible malfunctions and ways to eliminate them

Symptom	Possible cause	User actions
The element does not fit into the slot.	Incorrect orientation; contamination in the socket	Check the orientation of the element and the adjacent surface, clean with a soft brush
The central axis rotates with difficulty	Dirt, dust or pinching of the element	Carefully disassemble the upper level, remove the burnt material, and inspect the axle.
The element has warped or deformed	Mechanical trauma, overheating, excessive effort	Discontinue use of item; replace with a spare or order from supplier
Over time, the color of the elements fades.	Repeated use, exposure to light or temperature	Continue use; pallor does not affect the functionality of the training model
Failed to disassemble the model	Elements stuck due to pressure	Apply even but not excessive force; try to gently twist the element before pulling it out.
There are scuffs on the surface.	Frequent assembly and disassembly	This does not affect use; protect the model from rubbing against sharp objects.

8. Storage and transportation conditions

- Store the model in a dry, well-ventilated area at a temperature not lower than +5 and not higher than +40 °C and a relative humidity of up to 80% at +25 °C without condensation.
- Pack all items in factory containers or in sturdy boxes with cushioning material to prevent movement of parts during transportation.

- Do not squeeze the model or place heavy objects on it - this will cause deformation.
- Protect the model from direct sunlight for long periods of time as this may alter the color saturation.
- When transporting, use closed transport; avoid sudden changes in temperature and vibration.
- The storage period before commissioning is not limited, provided that the specified requirements are met.

9. Warranty obligations

- 9.1. The warranty period of the product is 12 months from the date of sale specified in the warranty card.
- 9.2. The manufacturer guarantees that the product complies with the declared technical characteristics, provided that the rules for transportation, storage and operation set out in this passport are followed.
- 9.3. During the warranty period, product defects that have arisen due to the manufacturer's fault will be eliminated free of charge. The method of elimination (repair, component replacement or product replacement) is determined by the service center.
- 9.4. Warranty service is provided upon receipt of a correctly and completely filled out warranty card and a document confirming the fact and date of purchase.
- 9.5. The warranty does not apply to cases where the malfunction is caused by:
 - mechanical damage, in particular cracks, chips and deformation of the housing and of the components of the product;
 - violation of the operating, storage or transportation rules set out in this passport;
 - ingress of liquid or foreign objects into the product, and also the action of insects and animals;
 - independent disassembly, repair or modification of the product, in particular repair at unauthorized workshops;
 - use of the product other than for its intended purpose;
 - force majeure circumstances (fire, flood, earthquake, etc.).
- 9.6. The warranty does not apply to natural wear and tear of the coating and appearance of the product, as well as to consumables.

10. Product disposal

- The product is not electrical or electronic equipment, therefore the marking in the form of a crossed-out container does not apply to it.
- After the end of the service life, the product is disposed of according to the rules established at the institution that operated it, with prior separation by materials.
- Hand over the packaging elements (cardboard, polymer materials) to the corresponding streams of recyclable materials.

Contacts

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Conditions of use and storage of the product

The product is intended for educational work in general secondary education institutions and is used only under the control and supervision of a teaching staff member; the recommended age of students — from 10 years, that is, students of grade 5 and of higher grades. Keep the product in a dry, clean and ventilated room at a temperature from +5 to +40 °C and relative air humidity up to 80 % without condensation, separately from heat sources and out of direct sunlight, moisture and dust. Use the product exclusively for its intended purpose and do not allow drops, impacts or other mechanical damage. If you notice damage, a crack or any malfunction, stop working with the product immediately and inform the teacher or the responsible person of the educational institution; repairing the product on your own is prohibited.

WARRANTY CARD

Product name:	DNA model
Product model:	LABOTRIX HELIX N1
Serial number:	
Date of sale:	
Warranty period:	12 months from the date of sale
Trading organization:	
Signature of the seller:	

The goods have been received in working order, without visible damage, complete, and have been checked in my presence. I have no claims regarding the quality of the goods; I have read and agree to the operating and warranty service conditions.

Full name of the buyer

Buyer's phone number Buyer's signature

Dear Customer!

Thank you for choosing Labotrix products. After-sales service of this product is provided in accordance with the regulations of the company and the legislation of the country of sale. So that we can serve you quickly and without unnecessary formalities, check that this warranty card is filled in correctly at the moment of purchase and keep it together with the payment document throughout the entire warranty period. When applying for repair, hand the product over to the seller or to the service center together with the filled-in card.

Procedure for applying

1. The right to free warranty service for the product is valid for 12 months from the date of sale specified in the warranty card. Within this period, components that have failed due to a manufacturing defect are repaired or replaced without payment from the buyer.
2. Before contacting, make sure that the malfunction is not caused by the reasons listed in section 9 of this passport, and if possible, use the table of possible malfunctions in section 7.3.
3. After the 12-month warranty period, repairs are carried out for a fee; the cost of work and spare parts is determined depending on the nature of the malfunction.

Grounds for refusal of warranty service

The company reserves the right to refuse free service or to perform the work on a paid basis if at least one of the following circumstances is established:

- absence of the warranty card, its incomplete or corrected completion, and also the absence of a document confirming the purchase;
- non-conformity of the serial number of the product with the number specified in the card, or damage to the factory marking;
- traces of independent disassembly, repair or modification of the product;
- damage caused by violation of the operating rules, connection to an unsuitable power source or external mechanical impact;
- damage as a result of force majeure circumstances.

Service Records

Date of entry	Description of the malfunction	Work performed	Position, signature, full name of the responsible person