

**List of measuring instruments and test equipment
Scientific and Practical Center**

The name of the defined characteristics (parameters) of the product. Purpose of measuring instruments	Name of measuring instruments type (brand), manufacturer, factory and inventory numbers	Basic metrological characteristics	Year of production and commissioning
1	2	3	4
Molecular Genetic Laboratory			
Designed for polymerase chain reaction (PCR) with detection of accumulation of PCR products during amplification using test systems based on the principles of fluorescent detection.	The amplifier detecting Type DT PRIM-4M1; NPO DNA Technology LLC. Russian Federation, Moscow region, Protvino; certified in accordance with TU 9443-004-96301278-2010. Factory number no. A5D409 Inv.no.241711642	The format of the thermoblock is 96 tubes per 0.2ml (12x8); the temperature range of the thermoblock is 0...100 ° C; the heating rate of the thermoblock in the temperature range is 4...99 3 ° C/sec; the Peltier element; the excitation source is LED; the number of channels is 5;	2015/2015
The desktop model of the box for PCR works is designed for use in laboratories of DNA analysis, genetic engineering, and molecular biology.	UVC/T-M-AR PCR Box BioSan LLC, Latvia, LV-1067; factory number No. 840809016. Version 11 Inv.No. 24130003850	UV lamp-TUV-15W, type of radiation- ultraviolet 254 nm, without ozone; daylight lamp-15W; UV irradiation timer- 0-24 hours; operating voltage -230V, 50Hz, 70W or 115V, 60Hz, 70W.	2008/2008
It is intended for the separation of solutions into fractions. The rotor is equipped with removable adapters for Eppendorf type tubes and is closed with a lid that locks during operation of the centrifuge.	Centrifuge SM-50 Latvia, Riga, LV-1006, ELMI, Serial number No. 811731 Inv.No. 24130003850	According to the level of electrical safety, it belongs to class I type H according to GOST 12.2.025; number of tubes in the rotor-12 pcs; rotor rotation speed from 1000 to 16000 rpm; timer range from 1 to 99min; braking system- three-stage, switchable operating temperature range from +10 to +45 °C;	2008/2008
Designed to maintain a set temperature (as	Thermostat solid-state programmable small-	Number of Eppendorf tubes: 1.5ml-	2008/2008.

well as changing the temperature according to a set program) a matrix in the sockets of which test tubes with a reaction mixture are installed.	sized TT1 "Gnome" "DNA Technology", Protvino; Factory number No.TIW-535 Inv.no. 24130003850	40; 0.5ml-28; temperature range: up to 99 °C; accuracy of temperature maintenance: 0.5 °C	
The device provides the possibility of simultaneous vortexes and separation of samples using vortexes and centrifugation modules located on a single spin module.	Centrifuge "Fuga/vortex micro-spin FV-2400" BioSan LLC, Latvia, LV-1067; serial number No. 500808009. Version 6. Inv.No. 24130003850	Rotor rotation speed-2400; 3000ob/min; acceleration time-5s; continuous operation time 1 hour; R-1.5 for 12x1.5 micro tubes; R-0.5/0.2 for 12x0.2 ml and 12x0.5 ml micro tubes	2008/ 2008
The box is designed to protect the operator when working with pathogenic agents and microorganisms transmitted by airborne droplets, as well as to create an abacterial air environment with specified parameters in a confined space.	The box is abacterial of the air environment. Type BAVp-01-"Laminar-C" 1,2 (01). CJSC "Laminar systems". Factory No.220120839. Inv.No. 24130003850	HEPA filter according to GOST R 51251-99- H 14, bactericidal lamp 30W, II A protection class, degree of air purification – 99.9%	2008/2008
It is designed for aspiration (removal) of trace amounts of buffer from the walls of Eppendorf tubes during purification of DNA (RNA) and other technologies of macromolecule re-deposition	Aspirator with trap vessel FTA-1 SIA Biosan Latvia, LV-1067. Riga serial number 04010815100413	Vacuum—500mbar; filtration-microbiological filter 2200/02 hydrophobic; filter pore diameter 0027micron; current consumption/power 12V,0.3A/3.6W	2015/2015
For measuring relative humidity and air temperature.	The hygrometer is psychrometric. Type VIT-2. R. Ukraine JSC "Steklopribor". Factory No. 962 Inv.No.005	Relative humidity measurement range: from 54 to 90%, from 40 to 90%, from 20 to 90%; temperature range: from 20 to 230C, from 23 to 260C, from 26 to 400C; temperature measurement range: from 15 to 400C Aspiration rate from 0.5 to 1.0m/s	2015./2015
The agricultural thermometer is designed to measure the temperature in refrigeration units	Thermometers are glass Type TS-7-M1. PJSC Steklopribor. Chervonozavodskoye.Poltava region. Ukraine Factory number 099.	Temperature measurement range from minus 30 to plus 30 °C; the price of dividing the scale is 1 ° C; thermometric liquid-methylcarbitol	2015/2015
For storing reagents, making ice.	Electrolux refrigerator, AB Electrolux, Sweden	Niche size: 1225x560x550 mm	2008/2008

	<p>Factory no.0742 Inv.no. 24150012387</p>	<p>Energy consumption class: A+ Annual electricity consumption: 214 kWh Refrigerator defrosting: automatic Weight: 39 kg Cable length: 2.4 m Lighting: LED lamp Noise level: 35 dB Re-hung doors Mechanical temperature control.</p>	
For storing reagents, making ice.	<p>Electrolux refrigerator, AB Electrolux, Sweden Factory no. 0737 inv.number 24150012372</p>	<p>Niche size: 1225x560x550 mm Energy consumption class: A+ Annual electricity consumption: 214 kWh Refrigerator defrosting: automatic Weight: 39 kg Cable length: 2.4 m Lighting: LED lamp Noise level: 35 dB Re-hung doors Mechanical temperature control.</p>	2008/2009
For storing reagents, making ice.	<p>Electrolux refrigerator, AB Electrolux, Sweden Factory no. 0746 inv.number 24150012373</p>	<p>Niche size: 1225x560x550 mm Energy consumption class: A+ Annual electricity consumption: 214 kWh Refrigerator defrosting: automatic Weight: 39 kg Cable length: 2.4 m Lighting: LED lamp Noise level: 35 dB Re-hung doors Mechanical temperature control.температуры.</p>	2008/2009

<p>For storing reagents, making ice.</p>	<p>Refrigerator of JSC KZH "Biryusa" Factory no. 056860024358 inv.no. 241782068</p>	<p>Overall dimensions. Height 1225 mm Width 480 Depth 605 Adjusted sound power level, dBA, no more than (2) 40. Energy efficiency class (3) A Energy consumption at an ambient temperature of 250 C, kWh/ 24h, no more than (4) 0.66. The number of compressors is 1.</p>	<p>2017/2020</p>
<p>It is intended for sterilization of medicinal solutions with water vapor in accordance with the order of the Ministry of Health of the Russian Federation No. 214 dated 07/16/97 "On quality control of medicines. Manufactured in pharmacy organizations (pharmacies) hermetically sealed and uncorked in glass containers with a volume of up to 1000ml."</p>	<p>Steam sterilizer automatic for sterilization of solutions of medicines VKa-75-R-"PZ" JSC "State Ryazan Instrument Plant" Factory number No. 295 Inv number 241800405</p>	<p>The sterilizer is powered from a three-phase alternating current network with a rated voltage of 380 V with a power supply voltage deviation of 10% from the nominal value, with a current frequency of 50 Hz The power consumption is not more than 6.5 kW. Overall dimensions of the sterilizer (WxDxH),mm (540x686x1210) + 15 The inner diameter of the sterilization chamber is 400 +3 m, the depth of the sterilization chamber is 674+3 mm.</p>	<p>2018/2019</p>
<p>It allows measurements of transmission coefficients and optical density of liquid solutions, scattering suspensions, emulsions and colloidal solutions, etc.</p>	<p>Photoelectric photometer KFK-3-ZOMZ, JSC Zagorsky Optical and Mechanical Plant.Sergiev Posad.Moscow region. Factory number 1571071 Inv number 241740256</p>	<p>Spectral range 320-900 nm, wavelength reading range 315-990 nm Working length of the cuvette 1;3;5;10;20;30;50;100 mm Overall dimensions 500x360x165 mm</p>	<p>2016/2016</p>

To measure the mass of substances.	Electronic scales Scout Pro (modification SPU123) Factory number 7126500448 Inv number 24130003047	The maximum maximum weighing limit is 120 g. The lowest weighing limit is 0.02 g. The price of the calibration division is 0.01 g.	2008/2008
To heat the samples	Multi-bed water bath UT-4304E, ULAB NORTH KOREA Factory number 810233 Inv number 24150022470	The working size of the camera is 300x160x130mm Volume 12 l Dimensions 530x460x220 mm	2013/2013
It is designed for drying glass and metal medical utensils, Petri dishes, flasks, medical instruments, fatty oils, heat-resistant powders and other materials.	Drying cabinet SHS-80-01 SPU JSC Smolenskoye SKTB SPURussia Factory number 9558 Inv number 24130003885	Operating temperature range from 50 to 200 °C	2008/2008
The device provides the possibility of simultaneous indexing and separation of samples.	MS-3500 Test Tube Vortex SIA BIOSAN Latvia LV 1067, Riga, Ratsupites street 7/2 Factory number 01021019090137 Inv number 241801398	Speed control range 300-3500 revolutions/minute (step 100 revolutions/minute)	2016/2020
The camera is designed to determine the number and parameters of sperm motility	Makler's Counting Chamber Sefi Medical Instruments LTD 7026000106, ISRAIL Inv number 241740299	aluminum body with glass insert, cover glass in an aluminum frame; consists of 2 parts and optically flat glass; the upper part serves as a cover glass and has a grid in the center with a 1 sq. mm cell divided into 100 squares measuring 0.1 x 0.1 mm;	2016
Digital magnetic Stirrer with heating Intelli-Stirrer MSH-300i It is designed for simultaneous mixing and heating of chemical reagents.	Magnetic stirrer with heating Intelli-Stirrer MSH-300i Factory number 01030919090110 Inv number 241801179	Installation range +300 S +3300 S The installation range from an external sensor is +200 S 1500 S Installation Step 10 S Heating time of the work surface to a maximum of 11 minutes	2013/2020r

Sanitary and hygienic laboratory

Light level measurement	Combined device "TKA-PKM" (08) Pulse meter+Luxmeter Russia, St. Petersburg, LLC "NTP "TKA". Factory number. 08 5113. Inv.No. 241709445	Measuring range: 10 – 200,000 lux; ripple: 1-100 %	2015/2015
Measurement of microclimate parameters	Microclimate parameter meter "Meteoscope-M", Russia, Moscow, NTM-Protection, Factory number № 156415 Inv.No. № 241709450	Measuring range: temperatures from minus 40 to plus 85 °C; measuring range of relative humidity from 3 to 97%; air flow velocity from 0.1 to 20 m/s; air pressure from 80 to 110 kPa (from 600 to 825 mmHg).	2015 /2015
Measurement of harmful concentrations in the air	Universal gas analyzer GANK-4 AR, Russia, NPO Gank Device No.3620 Inv.No.241816089	Measurements at the MPC level of atmospheric air up to the MPC of the working area: 0.5 MPCs.p. – 20 MPCr.z.	2020г/2022 г
Laboratory of Molecular Biology			
Designed to measure the concentration of DNA, RNA and proteins	Photometer-fluorimeter-chemiluminometer programmable with a multifunctional tablet for measuring the concentration of DNA, RNA and proteins, BioTek Instruments Inc., USA serial number 19040210 inv number 241800404	Multifunctional photometer for microplates with accessories. Equipment for measuring luminescence, fluorescence and absorption with the possibility of incubation up to 50 degrees. C, with linear and orbital shaking functions. The set includes a laptop-based control station with software in Russian. Detection modes include reading the intensity of superlunar fluorescence, optical density in the UV and visible spectral regions, and luminescence. This modification includes the following modules: * SLX is a "Base"(*) that includes	2018/2019

		<p>the following features</p> <ul style="list-style-type: none"> - Linear, orbital, double orbital shaking. - Gen5 software. * F - Module for measuring the intensity of fluorescence (top) and luminescence (top) <p>Sensitivity: 2 pM Fluorescein, 320-700 nm and 10 amol ATP</p> <p>A filter cube for luminescence is included by default.</p> <p>Fluorescence filters are available separately.</p> <ul style="list-style-type: none"> * A is a module for measuring optical density in the UV-visible region of the spectrum. <p>The choice of wavelength is a monochromator.</p> <p>200-999 nm in 1 nm increments</p>	
<p>It is used in compatible BioTek detection systems to perform measurements of nucleic acid and protein concentrations;</p>	<p>Micro-volume tablet Take3, BioTek Factory number No.409900</p>	<p>The Take3 micro-volume tablet is similar in size to standard 96-well microplates and contains:</p> <ul style="list-style-type: none"> • 16 microspots with a diameter of 2 mm by 2 μl, arranged in a 2x8 geometry (A2-H3 arrangement), • two places for Biocells (A9, H9); and • two reading places (E10, E11) for one plugged rectangular cuvette with a maximum length of 54 mm. <p>Microspores can be accessed by opening the lid of the plate and exposing a slide made of</p>	<p>2018/2019</p>

		fused silica with a Teflon coating.	
Designed for mixing samples	Vortex, Bio-Rad Laboratories, Inc, USA. VORTEXER BR2000 EUROPE with adapter for large volume tubes No. 1660611 Inv number 241800406	Speed control: from 0 to 3000 rpm Overall dimensions are 14x16x12 cm Weight 2.2 kg Electrical characteristics 120V, 60Hz, 0.6A 230V, 50 Hz, 0.3A	2019
Designed to perform blotting	MINI ROCKER SHAKER 1660720, Bio-Rad Laboratories, Inc, USA. Inv number 241800407	230 V, a three-dimensional swinging platform for coloring and disintegration of gels, as well as a blotting platform for four 8 x 10 cm boards or two 10 x 20 cm blotting boxes	2019
For storing reagents, making ice.	Refrigerator Nord DX431010, Ukraine. Factory No. Sz75CY inv.number 241713060	Niche size: 1225x560x550 mm Energy consumption class: A+ Annual electricity consumption: 214 kWh Refrigerator defrosting: automatic Weight: 39 kg Cable length: 2.4 m Lighting: LED lamp Noise level: 35 dB Re-hung doors Mechanical temperature control.	2015/2015
For the separation of nucleic acids using agarose gel	Horizontal Electrophoresis System, Sub-Cell GT Agarose Gel Electrophoresis Systems, Bio- Rad Laboratories, Inc, USA Factory. № 329BR045514	The dimensions of the base are 26x12x6.5 Buffer volume* 265-320 ml The gel size is 7x7 cm The dimensions of the substrate are 7x7, 7x10 * - the buffer volume depends on the size and thickness of the gel	2019

		<p>Construction</p> <p>The base is cast transparent plastic</p> <p>Flaps for filling gel -Aluminum</p> <p>The lid is pure molded plastic</p> <p>Connectors/cassette with electrodes - Cast polycarbonate</p> <p>Electrical Connectors -Gold-plated brass</p> <p>The electrodes are Platinum, 0.25 mm in diameter</p> <p>Electrical cables -Double tinned copper wire; Non-flammable polyurethane insulation</p> <p>Electrical contacts -Nickel/Silver</p> <p>The gel substrate is UV permeable acrylic plastic</p> <p>Combs are Cast plastic and processed acrylic</p> <p>Gel filling device -Polycarbonate</p> <p>0.64 cm organosilicon foam</p>	
<p>Provides constant voltage and constant current for instruments used for electrophoresis.</p>	<p>PowerPac Basic power Supply, Bio-Rad Laboratories, Inc, USA</p> <p>Factory. No. 041BR301276</p> <p>Inv.241802066</p>	<p>Output voltage, 10-300 V</p> <p>Output current, 4-400 mA</p> <p>Output power, W 75</p> <p>Timer 99 h 59 min</p> <p>Output signal type Constant current, constant voltage</p> <p>Output signal ports 4 pairs</p> <p>Sensor output ports</p> <p>LED display</p> <p>Safety certificate EN61010</p> <p>Dimensions 21 x 24.5 x 6.5 cm</p> <p>Weight 1.1 kg</p>	<p>2019</p>

<p>A high-resolution documentation system that allows for fast, easy processing of gels and blots.</p>	<p>Highly Sensitive DNA, Protein Gels and Blots Documentation System, ChemiDoc MP Imaging System, Bio-Rad Laboratories, Inc, USA Factory number No. 734BR4239 Inv 241802064</p>	<p>Types of detections: -fluorescence -chemiluminescence -gel documentation -colorimetry (densitometry) - visualization of gels and blots without staining Exposure - 0.01-120,000 sec Humidity 10-80% rel The temperature is 10-28C Ethernet Port - available The pixel size is 4.54x4.54mkm Power supply 100-240 V Frequency 50-60Hz Sample size 16.8 x 21 cm The lens is 36mm Data export format: in the form of user protocols with the ability to edit data; images with the extension SCN, JPEG, TIFF -16 or -8 bits</p>	<p>2020/2020</p>
<p>Provides high transfer efficiency for a wide variety of proteins.</p>	<p>Trans-Blot Turbo Rapid Blotting System, Bio-Rad Laboratories, Inc, USA Factory. № 690BR028430 Inv 241802065</p>	<p>Dimensions: 26.0 x 21.1 x 20.4 cm Weight: 8 pounds with cassettes, 4.5 pounds without cassettes Input voltage: 100-240 Vac current, 50-60 Hz, 175 W max. Fuses: Two 6.3A, 250 V, fuses are located above the connection to the power supply On/off switch: Yes, the lines are connected USB port: Yes, the input is only for firmware updates Cooling Fan: Yes</p>	<p>2019/2019</p>

		<p>Output power: 0-26 Vac current (1 V rise coefficients), 0-2.6 post. current (0.1 A rise coefficients) for each cassette</p> <p>Operating conditions: Ambient temperature 15-31°C, relative humidity 0-95% (non-condensing)</p> <p>User interface 18-button keyboard, 128x64 pixel monochrome display</p> <p>Programmable methods: up to 25 user-defined</p> <p>Pre-programmed methods: Standard SD, 1.5mm gels, High MV, Low MV, Mixed MV, 1 mini-PROTEAN® TGXTM Gel</p> <p>Audible alarm: Yes</p> <p>User Notification:</p> <ul style="list-style-type: none"> • Power failure during operation • No load detected • No cassette found • Completion of the analysis • Watt-hour limit 	
To separate proteins using polyacrylamide gel	<p>Electrophoresis Vertical Camera Mini-PROTEAN Tetra Cell Bio-Rad Laboratories, Inc, USA Factory. № 552BR222653 Inv 241802068</p>	<p>Polycarbonate Pin, locking ring and spring Stainless steel Filling frames* Polysulfone Grey gaskets Thermoplastic rubber (grey)</p>	/2019

		<p>A set of electrodes Glass-filled polybutylene terephthalate The electrodes are platinum wire with a diameter of 0.010 inches Gasket, inner electrode rod Silicone rubber (green) Module for mini gels and Polycarbonate cover Sample loading guides** Delrin Crests* Polycarbonate Overall dimensions 16 (L) x 12 (W) x 18 (H) cm Compatibility of the gel kit Sets of ready-made gels The voltage limit is 600 VDC. current and 30 watts Package weight 2.0 kg</p>	
<p>It is designed for mixing and temperature control of samples in micro-samples, PCR tablets. It is used in genetic analyses – in the isolation of DNA, RNA and for further sample preparation; in the biochemistry of studying enzymatic reactions and processes; in the extraction of metabolites from cellular material.</p>	<p>TS-100 thermoshaker for micro-tubes and PCR tablets, 2019 Factory. № 190567 Inv No. 241802071</p>	<p>Temperature setting range +25°C ... +100°C The temperature control range is 5°C above room ... +100°C The temperature setting step is 0.1°C Temperature stability ±0.1°C Temperature accuracy at +37°C- ±0.5°C Average heating rate in the range from +25°C...+100°C- 4°C/min Uniformity of temperature distribution across the unit at +37°C±0.1°C Uniformity of temperature distribution across the unit at +100°C±0.2°C</p>	<p>2019/2019</p>

		<p>The calibration range is temp. The coefficient is 0.936...1.063 (± 0.063) Speed control range 250-1400 rpm Digital time setting 1 min–96 h (step 1 min.) Timer beep + The orbit is 2 mm LCD display, 16 × 2 characters A microprocessor that controls time, speed and temperature + The maximum continuous operation time is 168 hours Dimensions (L×W×C) 220x240x90 mm (without block) Weight-3.7 kg Current / power consumption-12V, 3.5 A / 42W External power supply- input. AC 100-240 V 50/60 Hz; output. DC 12V</p>	
Cell Laboratory			
<p>It is intended for indirect immunofluorescence analysis with quantitative determination and staining of γ-H2AX and 53BP1 in lymphocytes (obtained from whole blood).Allows you to make double-stranded DNA breaks visible and then automatically analyze them.</p>	<p>Analyzer for immunofluorescence analysis AKLIDES Nuk Human Lymphocyte Complete Combi MEDIPAN GMBH, Germany Factory number No.2017AKL2-42 Inv.number 241773352</p>	<p>Modular System: Fully automated Olympus IX 83 Motorized Fluorescent Microscope with 3 lenses The results of the screen test after 15 seconds LED light source (4 wavelengths) Motorized X-Y table for 5 slides</p>	2016/2017

		High-quality camera A picture of the sample in live mode AKLIDES®	
It is intended for observation and morphological studies of drugs in transmitted light	Binocular BIOMED microscope, Russia Factory number 4F8663200/23 inv.number No.24130002984	Magnification, multiple: 40x-1600x* Nozzle: Binocular Turret: 4 positions for lenses (from the observer) Lenses: Achromats: 4x0.1 10x0.25 40x0.65 100x1.25MI Wide-field eyepieces: WF10x/18mm, WF16x/12mm* Linear field of view: 18 mm Slide table: With two-coordinate movement of the drug Condenser: With iris diaphragm, Abbe NA 1.25 system, Illuminator: Lamp with smooth brightness adjustment Light Source: 6V 20W Halogen lamp Current source: 220 volts Overall dimensions: 325x230x440 mm Weight: 5 kg	2017/2018
It is intended for the separation of solutions into fractions. The rotor is equipped with removable adapters for Eppendorf type tubes and is closed with a lid that locks during operation of the centrifuge.	Eppendorf 5804 R Hamburg centrifuge Factory number 5805DG265249 Inv No.241798919	According to the level of electrical safety, it belongs to class I type H Maximum speed, rpm 5000 (4500 g); maximum capacity, ml 4 =100; cover for aerosol-proof centrifugation	2018/2018
Designed to create rotational movements of liquid in test tubes and laboratory utensils	Shaker SK-O180-Pro, China Factory number SA5F001044	200-240 W power 530 W, Mixing type, rotation speed range 100-800 rpm.	2015/2017
For storing reagents, making ice.	Zanussi refrigerator, factory no.ESD51724000855, Inv No.24150012391	Size : 1225x560x550 mm Energy consumption class: A+ Annual electricity consumption: 214 kWh 2008,	2008/2008

		2008 to 320C. inv.Number 24150012391 Refrigerator defrosting: automatic Weight: 39 kg Cable length: 2.4m Lighting: LED lamp Noise level: 35 dB Changeable doors Mechanical temperature control	
For storing reagents, making ice.	Biryusa refrigerator 20 JSC "KZH Biryusa" Russia Krasnoyarsk factory No.5641433 Inv No.24150006646	Size : 1225x560x550 mm Energy consumption class: A+ Annual electricity consumption: 214 kWh 2008, 2008 to 320C. inv.Number 24150012391 Refrigerator defrosting: automatic Weight: 39 kg Cable length: 2.4m Lighting: LED lamp Noise level: 35 dB Changeable doors Mechanical temperature control	2005./2005