INSTITUTE OF NEUROLOGY, PSYCHIATRY AND NARCOLOGY OF THE NATIONAL ACADEMY OF MEDICAL SCIENCE OF UKRAINE

BIOPROMIN LTD

NONINVASIVE SCREENING ANALYZER

Noninvasive Screening Analyzer was developed by Ukrainian scientists.

The author of the method is Dr.Malykhin Anatolii, an academician of Russian Academy of Natural Sciences, Doctor of Medicine, leading scientist of the Institute of neurology, psychiatry and narcology of Ukraine AMS.

Technical part of this development was realized by Pulavskyi Anatolii, BIOPROMIN Ltd

Model -T/2011

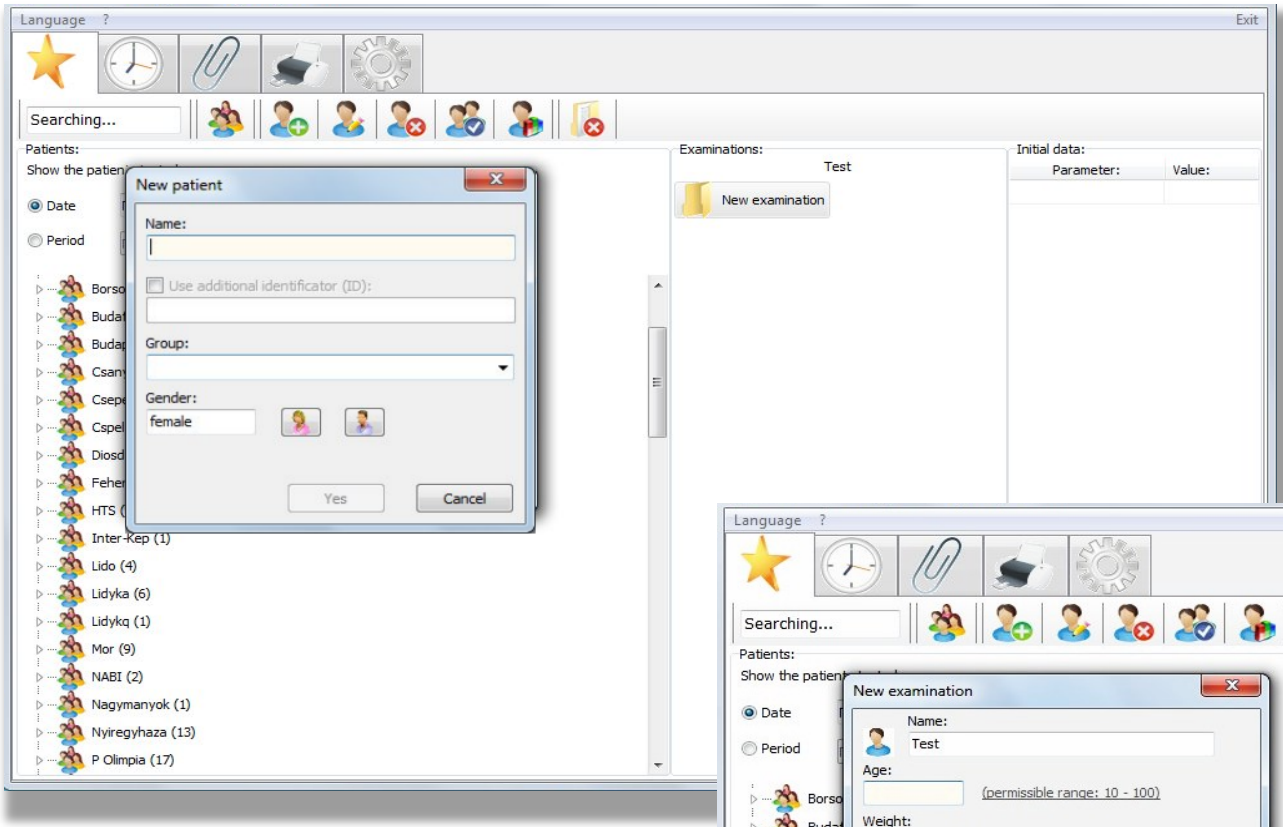
Model -L/2012,
Model -L/2012w

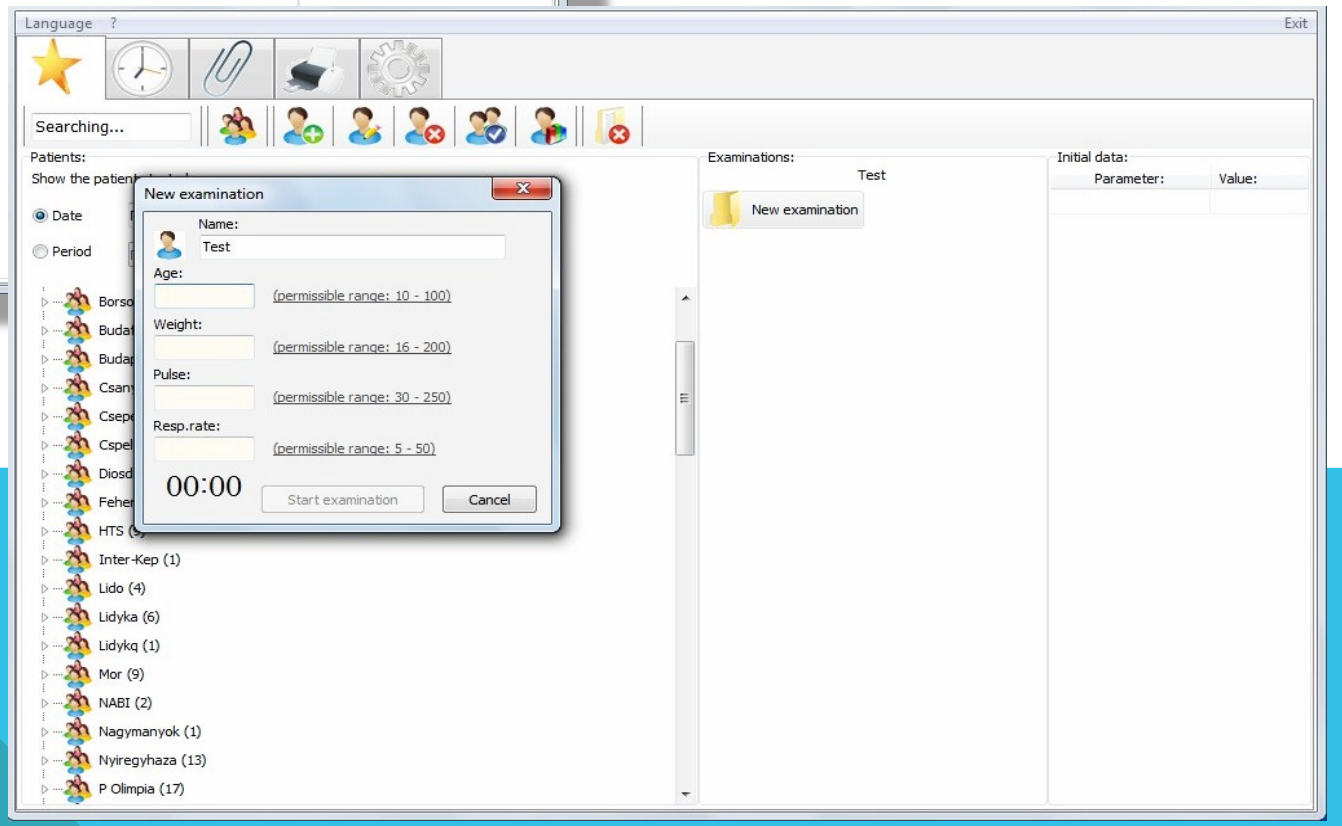
Model -L/2007,
Model -L/2007w

Noninvasive Analyzer can be used in clinics, medical research centers, wellness centers and resorts, other medical institutions or by private/family doctors.

There is no harmful influence of the Analyzer to a patient during examination.

- Environment temperature
- Atmosphere pressure
- Light flux
- Gaseous compound of air





Before each measurement, some initial information about a patient is required: name and surname, gender, age and weight, pulse rate and frequency of breath

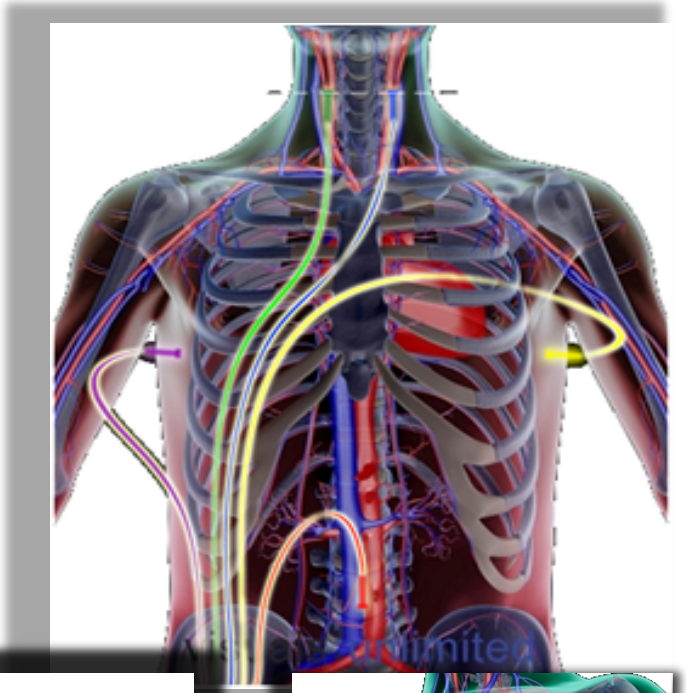
It takes 3-10 minutes to test a patient.

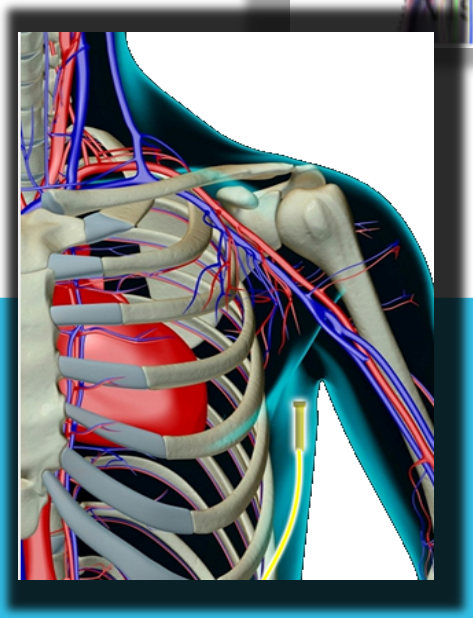
Noninvasive Analyzer has got 5 microprocessors, which are to be placed on bioactive fields of a patient's body

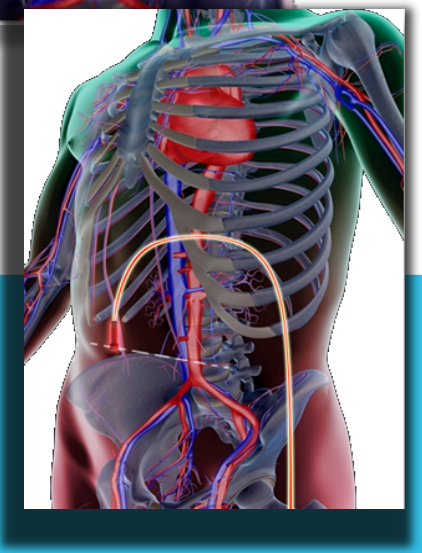
2 sensors - on the left and the right side of bifurcation of aorta (carotid body)

2 sensors - in the left and the right axillary creases

1 sensor - in the abdominal area, on umbilical region





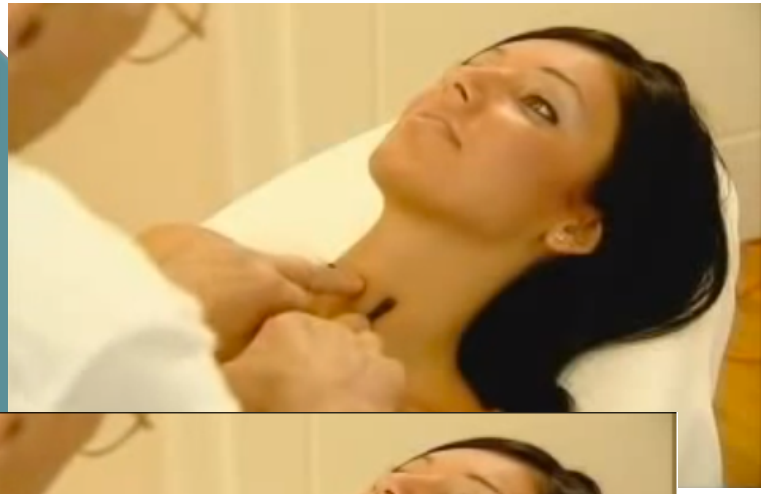


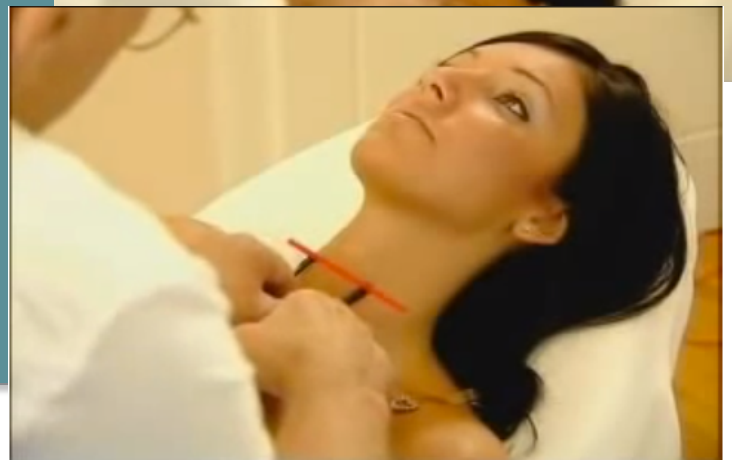
Why those areas have been chosen?

BIFURCATION OF AORTA/ CAROTID MICROPROCESSORS

This area is the one regulator of CO_2 rate in an organism. Regulation is realized by vagus nerve. Branches of vagus nerve go in carotid body (Glomus caroticus) and then reach heart atriums and pulmonary alveolus. Thus, systemic and pulmonary blood streams are correlated.

At the same time, this area is connected with acetylcholine production





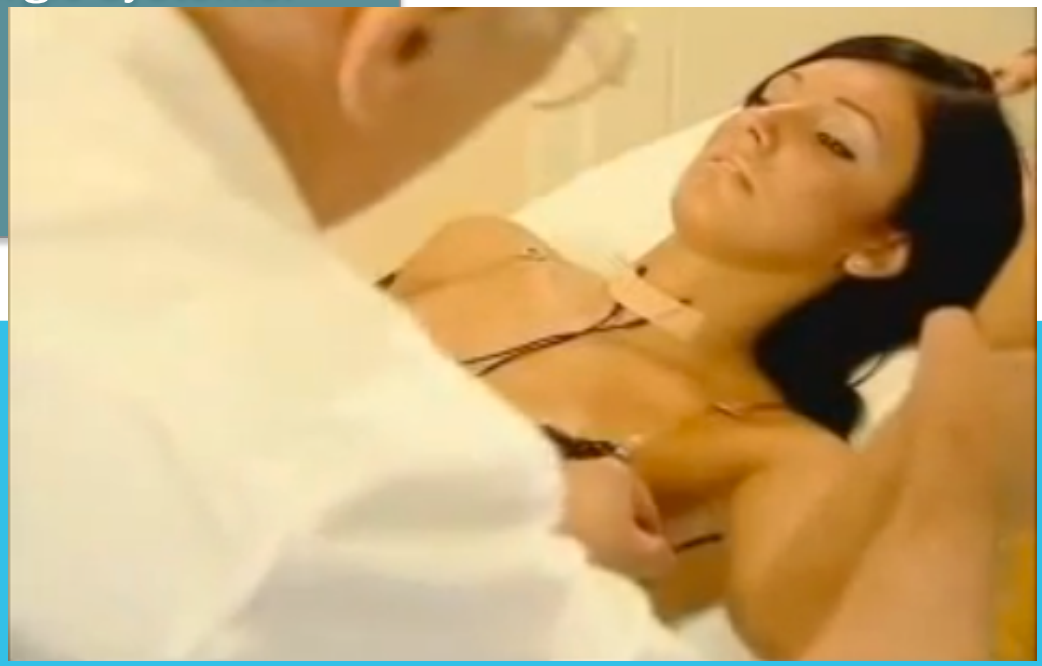
PRACTICAL NOTE: Where are the right places for carotid microprocessors?

From the position of anatomy, the point of carotid bifurcation is located in the middle, between sternocleidomastoid muscle and trachea, on the level of C3 and C4 cervical vertebrae. As we examine functioning of carotid arteries, so anatomical differences of people are not so important. The main thing is an asymmetry of temperature values. It is principal moment, that difference between left and right temperature values must be less than 0.3-0.4C. Often, the bigger values means that microprocessors were placed wrong. Rarely, the differences more than 0.5C are defined in patients with specific diseases.

Why those areas have been chosen?

AXILLARY CREASES

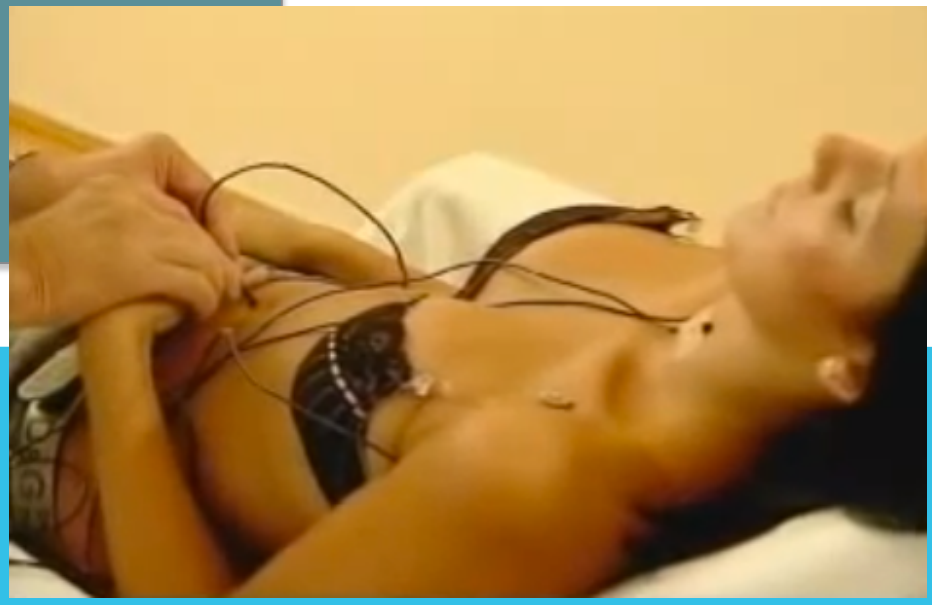
Arteria axillaris is informative for the measurement, too. First of all, the temperature in axillary creases reflects cardiac regulation.
It depends on heart work and is related with acetylcholine, adrenergic and serotoninergic systems.

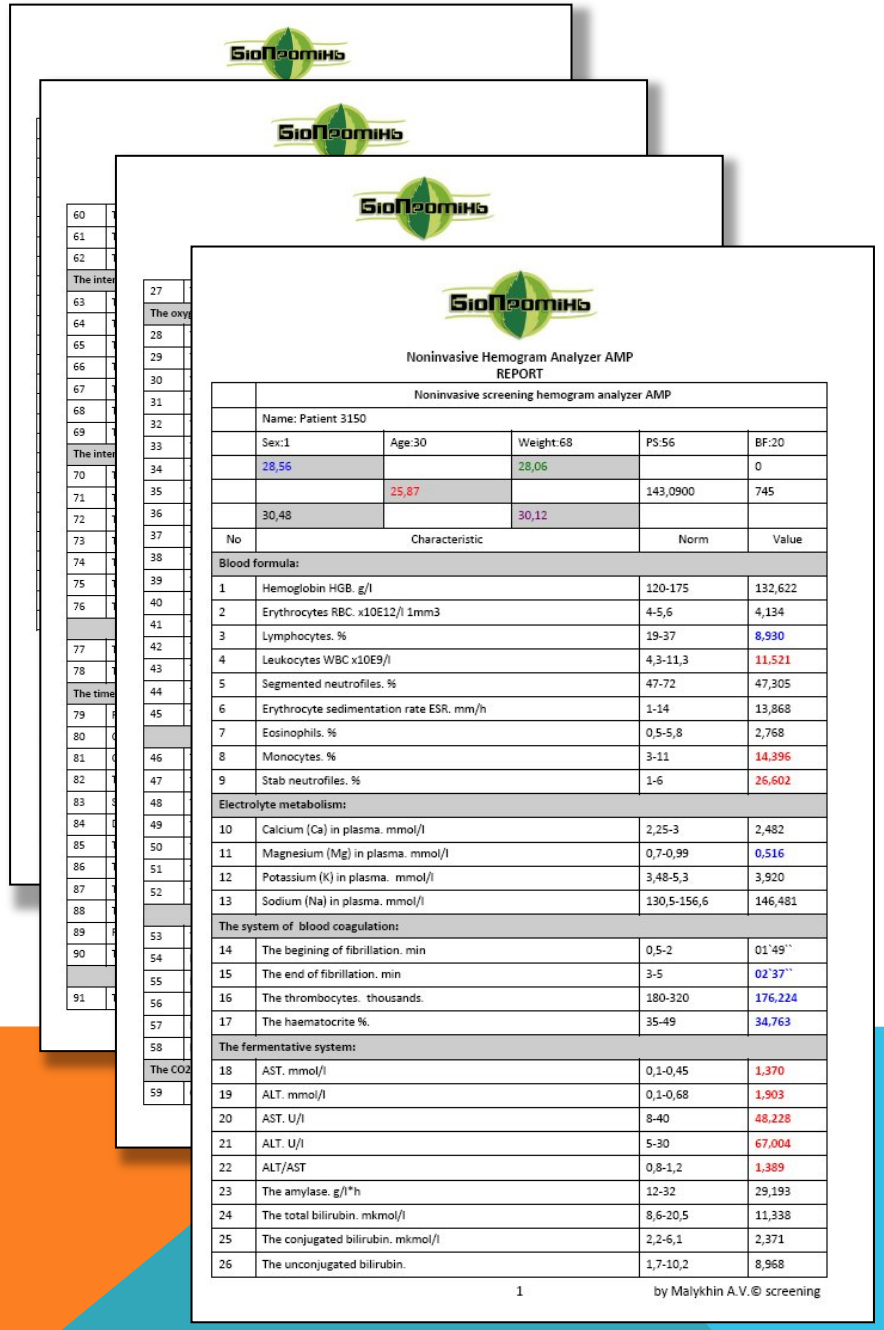


Why those areas have been chosen?

UMBILICAL AREA

Abdominal temperature (umbilical) is measured in the area, where aorta, inferior vena cava and large lymph vessel are joined. Temperature in this area, influences to the production of essential and nonessential amino acids. It is related to the functioning of gastro-intestinal tract, first of all.





Noninvasive Hemogram Analyzer AMP
REPORT

	Noninvasive screening hemogram analyzer AMP				
	Name: Patient 3150				
	Sex:1	Age:30	Weight:68	PS:56	BF:20
	28,56		28,06		0
		25,87		143,0900	745
	30,48		30,12		

No	Characteristic	Norm	Value
Blood formula:			
1	Hemoglobin HGB. g/l	120-175	132,622
2	Erythrocytes RBC. x10E12/l 1mm3	4-5,6	4,134
3	Lymphocytes. %	19-37	8,930
4	Leukocytes WBC x10E9/l	4,3-11,3	11,521
5	Segmented neutrofiles. %	47-72	47,305
6	Erythrocyte sedimentation rate ESR. mm/h	1-14	13,868
7	Eosinophils. %	0,5-5,8	2,768
8	Monocytes. %	3-11	14,396
9	Stab neutrofiles. %	1-6	26,602
Electrolyte metabolism:			
10	Calcium (Ca) in plasma. mmol/l	2,25-3	2,482
11	Magnesium (Mg) in plasma. mmol/l	0,7-0,99	0,516
12	Potassium (K) in plasma. mmol/l	3,48-5,3	3,920
13	Sodium (Na) in plasma. mmol/l	130,5-156,6	146,481
The system of blood coagulation:			
14	The begining of fibrillation. min	0,5-2	01`49``
15	The end of fibrillation. min	3-5	02`37``
16	The thrombocytes. thousands.	180-320	176,224
17	The haematocrite %.	35-49	34,763
The fermentative system:			
18	AST. mmol/l	0,1-0,45	1,370
19	ALT. mmol/l	0,1-0,68	1,903
20	AST. U/l	8-40	48,228
21	ALT. U/l	5-30	67,004
22	ALT/AST	0,8-1,2	1,389
23	The amylase. g/l*h	12-32	29,193
24	The total bilirubin. mkmol/l	8,6-20,5	11,338
25	The conjugated bilirubin. mkmol/l	2,2-6,1	2,371
26	The unconjugated bilirubin.	1,7-10,2	8,968

1 by Malykhin A.V.© screening

AT THE END OF AN EXAMINATION A DOCTOR RECEIVES THE REPORT WITH MORE THAN 100 PARAMETERS: HEMOGRAM, BIOCHEMICAL, HEMODYNAMIC AND METABOLIC PARAMETERS, ETC. BESIDES, THERE WILL BE A PROMPT FOR A DOCTOR ABOUT DIAGNOSIS AT THE END OF A REPORT. IT IS NOT A FINAL DIAGNOSIS.

Final diagnosis can be set only by a doctor!

Diagnostic abilities of the Analyzer ANESA

- The Analyzer allows estimating the state of organism from the position of its functional and hemodynamic balance, water metabolism and gaseous homeostasis

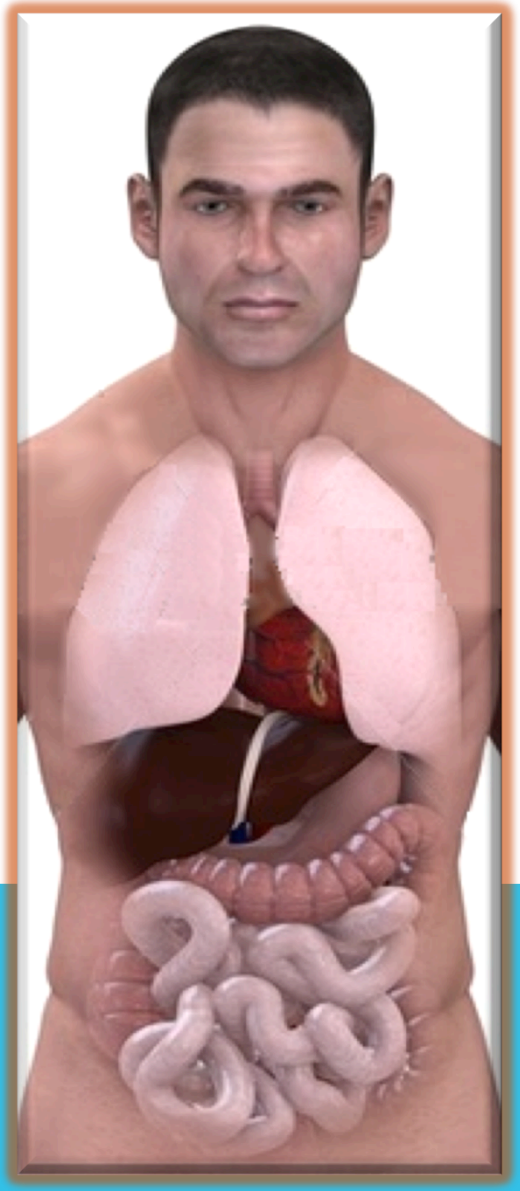
-Analyzer determines the main parameters of central nervous system : neuromuscular conduction, susceptibility to spasm and muscular weakness. It is possible to get the information about K, Na, Ca, Mg contained in blood.

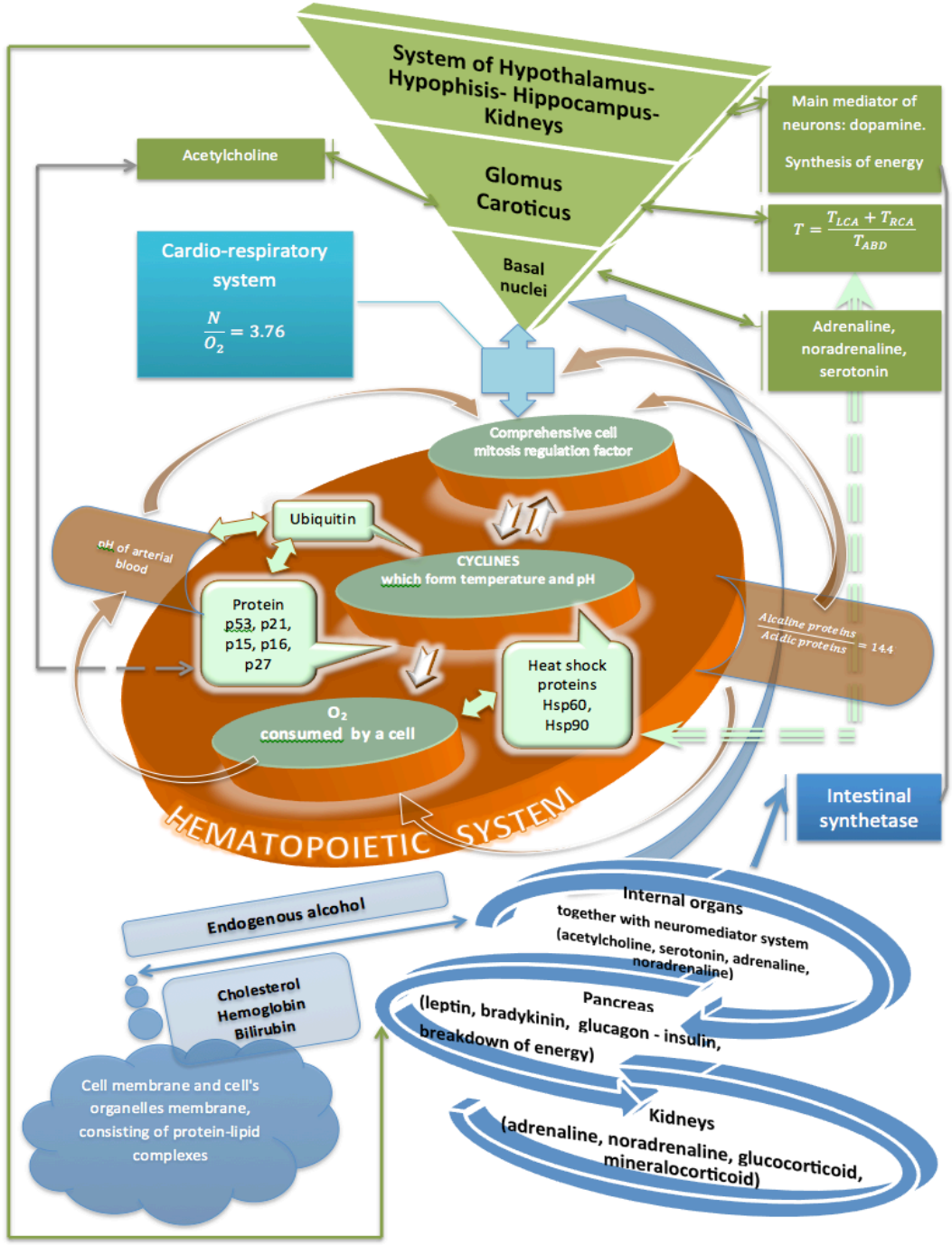
- The Analyzer estimates cardiovascular system: type of blood circulation and derangements in blood circulation of myocardium.

- It reveals main diseases of lungs: chronicle bronchitis and tracheobronchitis with the asthmatic component, chronicle and acute pneumonia.

-For the liver the device reveals hepatitis and cirrhosis

-For the kidneys the Analyzer allows diagnosing derangements of filtration.



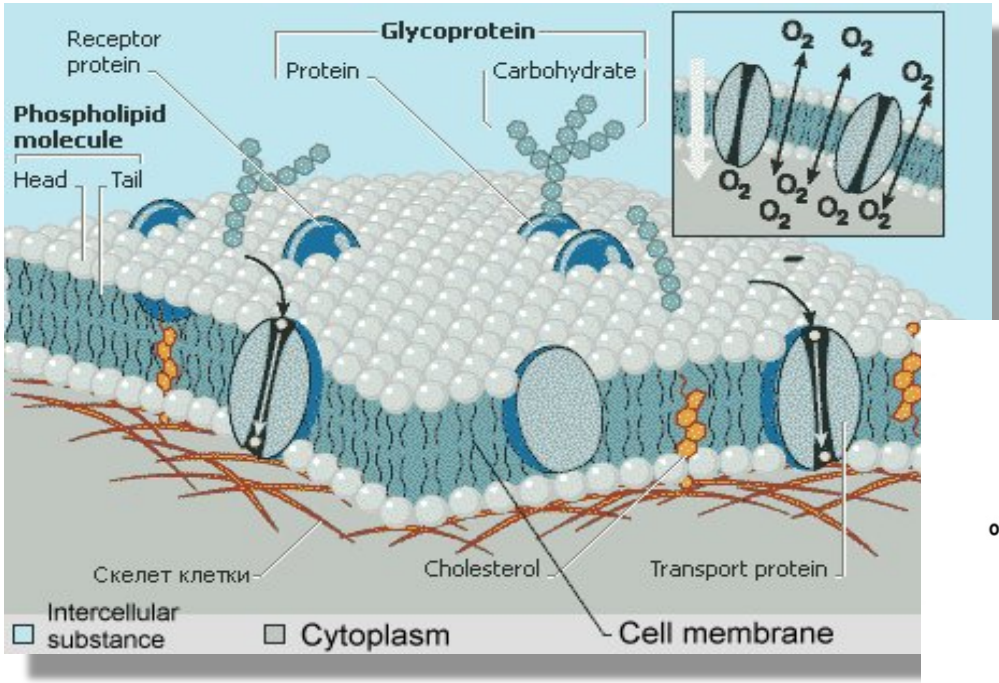


Theoretical concept of the methods. In general and shortly: system of thermal regulation

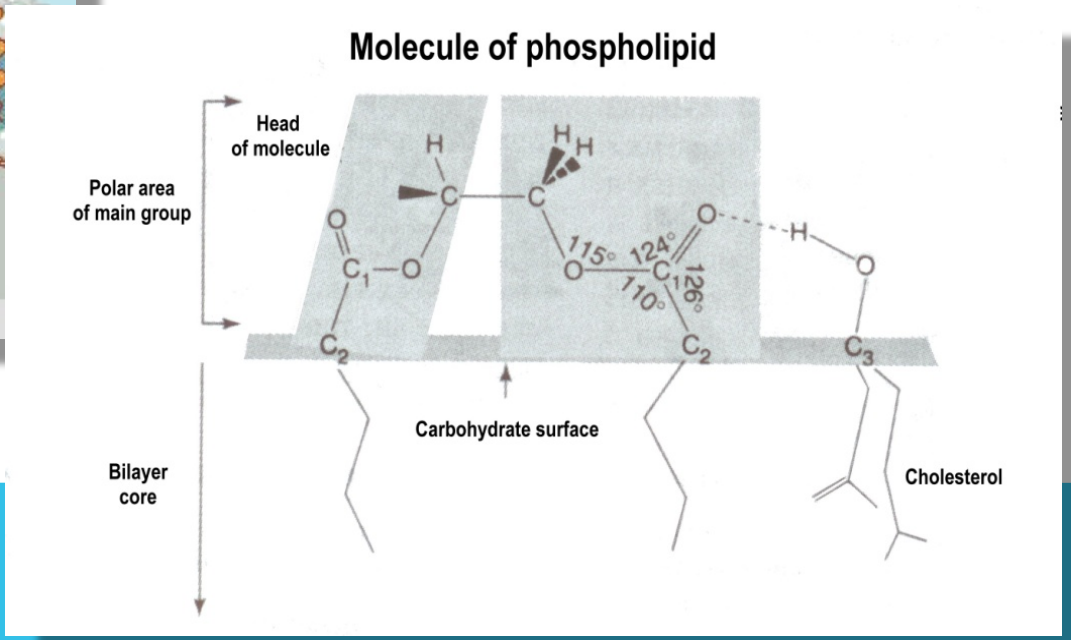
The system of thermoregulation relates with autonomic nervous system, especially with vagus nerve and right part of a heart, heart atriums and pulmonary system. Via phrenic nerve (branch of vagus nerve) all temperature values influence to phrenic movements. Meanwhile system of phrenic movements changes volume of lungs and correlations between pressure, volume and temperature (PVT). It is caused by synchronic activity of cholinergic and adrenergic mechanisms of regulation.

Regulatory system correlates with hemopoietic system, which depends on cell cyclines A and B resulted by carbohydrate, lipid and protein metabolism. These systems are interrelated with biochemical processes in organism via lysosomes and peroxisomes.

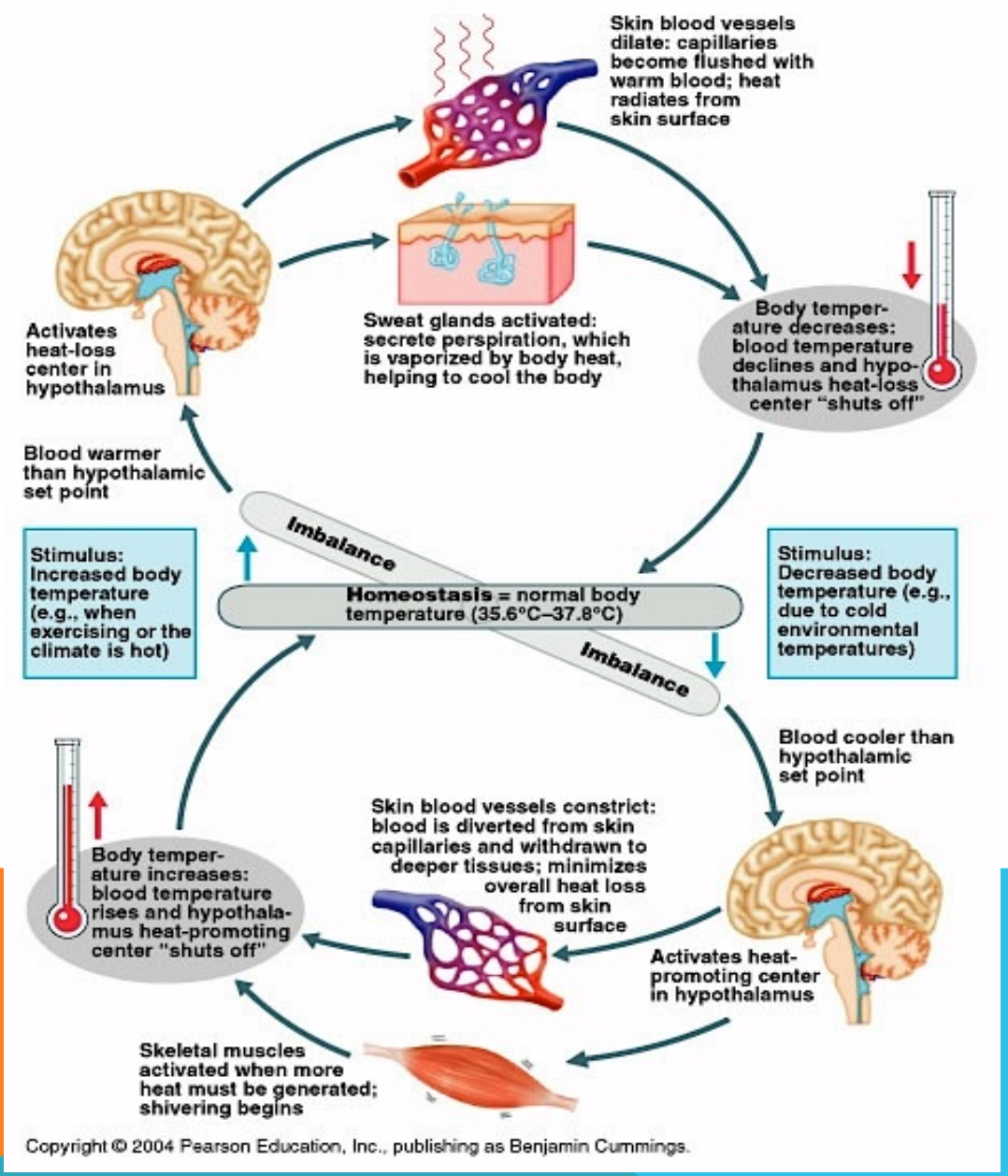
THEORETICAL BASE FOR NONINVASIVE MEASUREMENTS IN DETAILS



Noninvasive method is based on the well-known laws and models

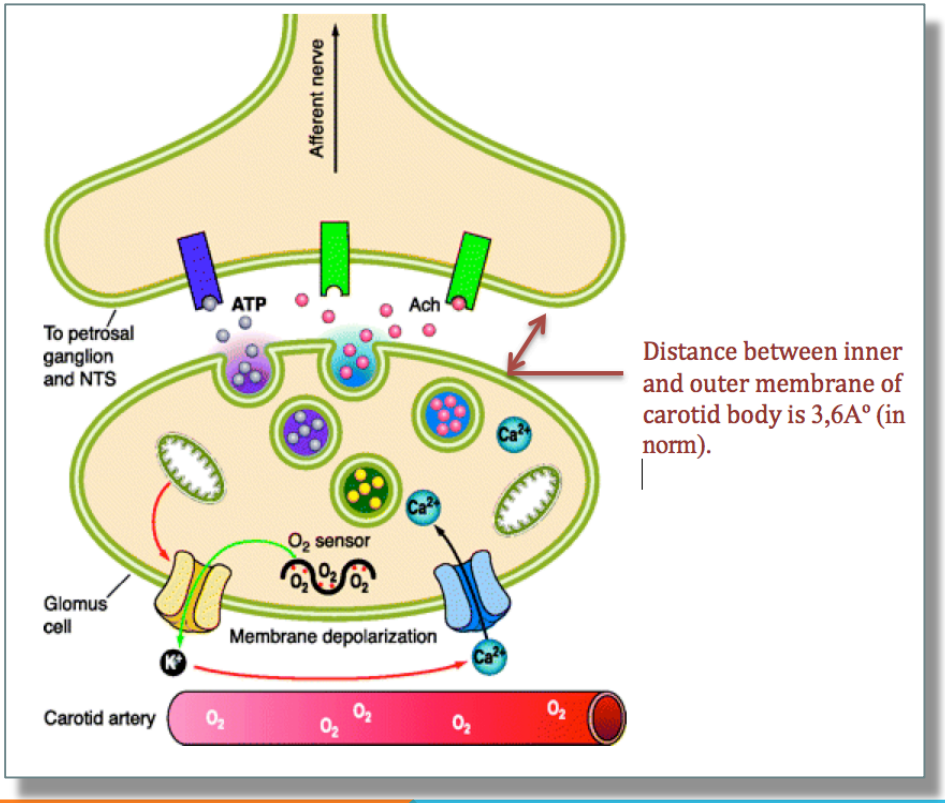


Fluid mosaic model of the structure of a cell membrane (Singer S. Nicolson G., 1973)
Model of low-density lipoprotein and membrane phospholipids (M. Brown G. Goldstein, 1984)



Thermoregulation is a complex regulatory, hemodynamic and metabolic process of interaction of hippocampus, hypothalamus and pineal gland.

Glomus caroticum and its role in temperature regulation



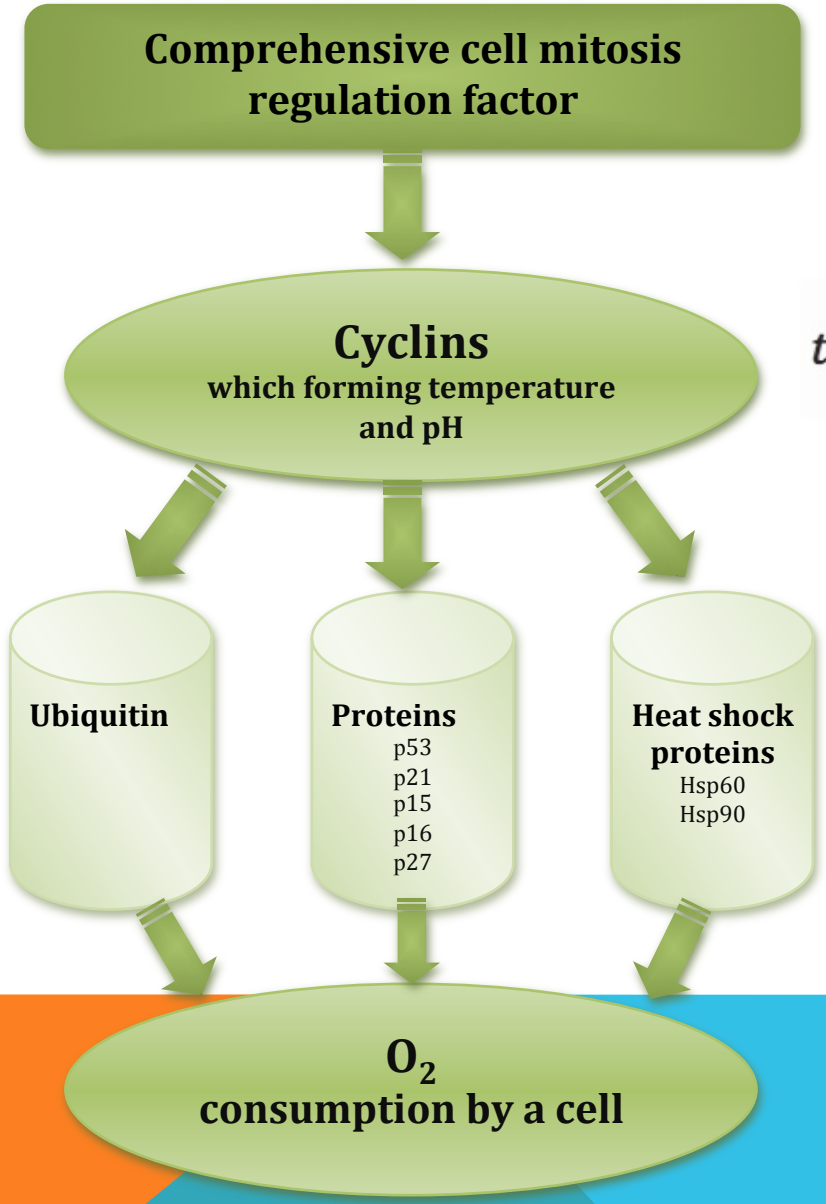
Temperature can be determined by a formula:

$$t = \frac{U + pV}{N_{HYn} + N_{Tyr}}$$

- t – temperature (36,06 °C)
- U - bond dissociation energy (1336 kJ* mol * sec)
- pV - bond synthesis energy (2270 kJ* mol * sec)
- N_{HYn} – quantity of hypothalamus' nucleuses (48)
- N_{Tyr} - quantity of tyrosine kinases in family (52)

Carotid body detects changes in the composition of arterial blood flowing through it, mainly the partial pressure of oxygen, but also of carbon dioxide.

Furthermore, it is sensitive to changes in pH and temperature.



Temperature interrelation with lymphoid myeloid complex (LMC) is going via the system of comprehensive cell mitosis regulation factor.

$$t = \frac{U + pV}{N_{HYn} + N_{Tyr}} \Leftrightarrow \frac{p53 + p21 + p15 + p16 + p27}{S_{cb}}$$

- t – temperature (36,06 °C)
- U - energy of bond dissociation (1336 kJ* mol * sec)
- pV - energy of bond synthesis (2270 kJ* mol * sec)
- N_{HYn} – quantity of hypothalamus' nucleuses (48)
- N_{Tyr} - quantity of tyrosine kinases in family (52)
- p53…p27 – proteins
- S_{cb} – distance between inner and outer membrane of carotid body (normal value is 3.6A°)

Interaction between temperature, comprehensive cell mitosis regulation factor and heat shock proteins Hsp90 and Hsp60 is carried out at the level of acetylcholine and bradykinin. This interaction is cyclical in nature and determines pH of arterial blood.

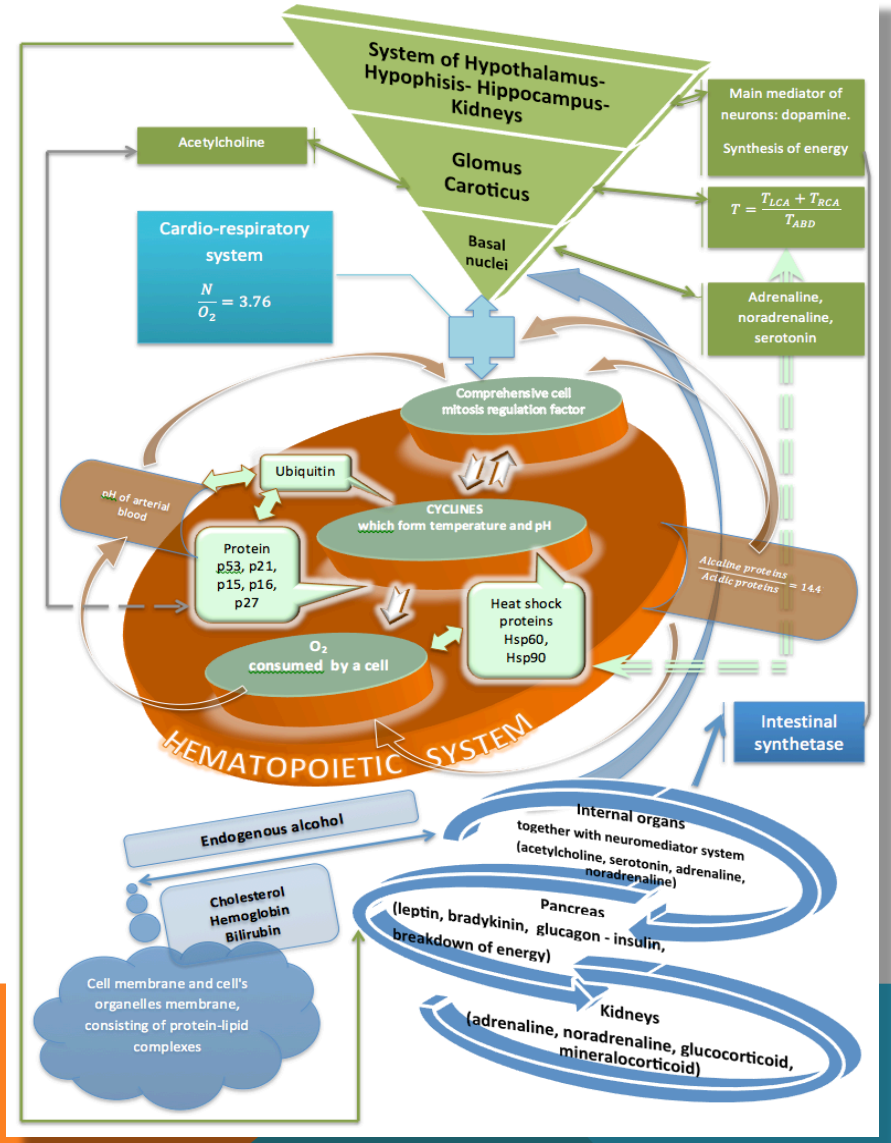


Fig. Major Pathogenic Mechanisms of Metabolism and Hemodynamics Regulation

The methodology that we developed for our equipment, is grounded on the well-known models and correlations of central regulatory mechanisms, autonomic nervous system, actuating mechanisms of organs, gastrointestinal tract and microflora. Those relationships have been determined and described by different scientists at different times.

In developing the device and software for it, the great analytical work has been done in order to consolidate and systematize the existing data. Some formulas have been adjusted during practical application of the device, based on the specific features of different population group in different environments. The developed software has been patented. So, more detailed information can be found in the description to the patent.

Several examples …

The well-known formulas are used in our software for determination of MCV, MCH, MCHC

$$MCV = \frac{HCT \times 10}{RBC}$$

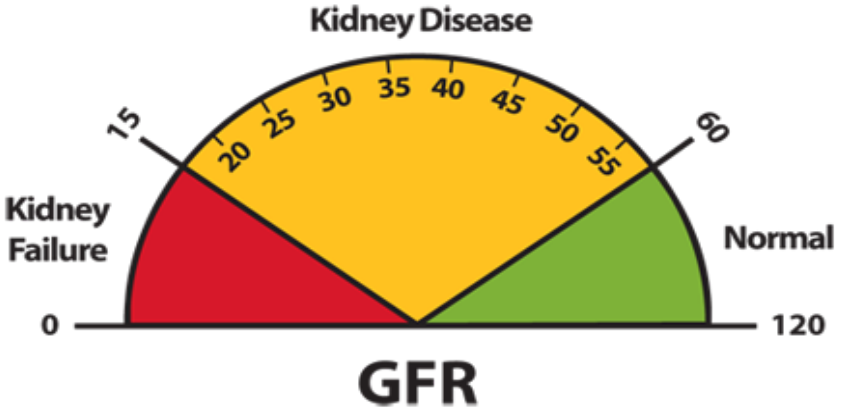
MCV - the average volume of a red cell
HCT – concentration of hematocrit
RBC – red blood cells/ erythrocytes

$$MCH = \frac{Hb}{RBC}$$

MCH - the average amount of haemoglobin per a red blood cell
Hb – concentration of hemoglobin
RBC – red blood cells/ erythrocytes

$$MCHC = \frac{Hb \times 10}{HTC}$$

MCHC - the average concentration of haemoglobin in the red cells
Hb – concentration of hemoglobin
RBC – red blood cells/ erythrocytes



Another generally accepted formulas, which are used in worldwide for definition of eGFR are:

- Cockcroft — Gault's formula
- Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI)) equation, which was developed and validated in the bonds of the National Kidney Disease Education Program (USA)

The equation CKD-EPI is used in our software (excluding factor for black race).

$$GFR = 175 \times SerumCr^{-1.154} \times age^{-0.203} \times 1.212\ (if\ black\ race) \times 0.742 (if\ remale)$$

where SerumCr- concentration of creatinine (mkmol/L)

An example of a formula, which was defined during practical application of the device (which includes temperature parameters), is the calculation of total protein:

$$Pr_T = \frac{\sum t_{AC} + \frac{\frac{AP}{746} + 1}{2} \times \frac{Hb}{2}}{2} \Leftrightarrow \frac{Q_{aDNA}}{Q_{aPC}}$$

Pr_T - total protein, (g/l)
t_{AC} – values of temperature in axillary creases (°C)
AP – atmosphere pressure, mmHg
Hb – concentration of hemoglobin (g/l)
Q_{aDNA} – quantity of amino acids in one-stranded DNA (16 569)
Q_{aPC} – quantity of amino acids of pore complex (7 440)

As a rule, the value of total protein is 67±6 g/l

An example of a modified formula is the calculation of the number of erythrocytes

$$RBC = \frac{Hb}{32}$$

recognized method of counting the number of red blood cells (RBC)

RBC – number of erythrocytes/ red blood cells (mln)
Hb – concentration of hemoglobin (g/l)

$$RBC = \frac{\frac{Hb}{32} + \frac{Hb + FB}{t_{ABD}}}{2}$$

modified formula, which is used in our software

RBC – number of erythrocytes/ red blood cells, (mln)
Hb – concentration of hemoglobin, (g/l)
FB – frequency of breath
t_{ABD} – value of temperature in abdominal area, (°C)

Certificates, patents and permissions
Our manufacturing facilities meet the requirements of EN ISO 9001:2008, EN ISO 13485:2003


certiso

QUALITY MANAGEMENT SYSTEM CERTIFICATE

144436-13-06-18

Name of certified organisation:

BioPromin Ltd.

Headquarters: 50 Khaliurina str., 61038 - Kharkiv, UKRAINE

Manufacturing plant: 8.a Povstannya prov., 61050 - Kharkiv, UKRAINE

Scope:

Development, manufacture, marketing and service of electronic medical devices

CE Certiso Ltd., Organisation for Certification and Testing on the Field of Medical and Hospital Engineering certifies that the quality management system applied by the organisation above meets the requirements of the following standard on the listed scope:

MSZ EN ISO 9001:2009
(ISO 9001:2008)

Issue: I
Issued: 18 June 2013
First issued: 18 June 2013
Start date of certified status: 18 June 2013

Expires:
17 June 2016


certiso

QUALITY MANAGEMENT SYSTEM CERTIFICATE

144437-13-06-18

Name of certified organisation:

BioPromin Ltd.

Headquarters: 50 Khaliurina str., 61038 - Kharkiv, UKRAINE

Manufacturing plant: 8.a Povstannya prov., 61050 - Kharkiv, UKRAINE

Scope:

Development, manufacture, marketing and service of electronic medical devices

CE Certiso Ltd., Organisation for Certification and Testing on the Field of Medical and Hospital Engineering certifies that the quality management system applied by the organisation above meets the requirements of the following standard on the listed scope:

MSZ EN ISO 13485:2012
(ISO 13485:2003)

Issue: I
Issued: 18 June 2013
First issued: 18 June 2013
Start date of certified status: 18 June 2013

Expires:
17 June 2016


CERTIFICATE OF FREE SALE 007167

Certificate No.: BII-1 Date: 23.04.2013 Valid till: 23.04.2016

TO WHOM IT MAY CONCERN

This is to certify, based on the information provided to us, the products listed below are manufactured and / or distributed by

Name, address of enterprise
BIOPROMIN Ltd.
50, Khaliurina Str., 61038 Kharkiv, Ukraine

and are freely available for sale in Ukraine.

Item number	Description of goods
1.	Automatic Noninvasive Express Screening Analyzer ANESA

This certificate should not be interpreted as a guarantee, explicit or implied for any of the products of the said company. It should not be used for advertising or similar purposes, and not used to represent the goods as being of Ukrainian origin.

Competent authority (name, address)
Kharkiv Chamber of Commerce and Industry
61037 Kharkiv, Moskovsky ave. 122B

Expert Stamp S.V. Ignatova


ДЕРЖАВНА ІНСПЕКЦІЯ З КОНТРОЛЮ ЯКОСТІ ЛІКАРСЬКИХ ЗАСОБІВ МІНІСТЕРСТВА ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ

СВІДОЦТВО ПРО ДЕРЖАВНУ РЕЄСТРАЦІЮ

№ 8995/2007

Згідно з наказом Держлікінспекції МОЗ України від 11 жовтня 2011 р. № 544

Аналізатори неінвазивні формули крові
ТУ У 33.1-22716816-001:2006

Ц6

в Додатку до даного Свідоцтва

9018 19 90 00

внесено до Державного реєстру медичної техніки та виробів медичного призначення України і дозволено для застосування в медичній практиці.

Виробник: Товариство з обмеженою відповідальністю "Біопромін"
61038, м. Харків, вул. Халтуріна, 50, Україна

Свідоцтво дійсне до 11 жовтня 2016 р.

Голова комісії з проведення реорганізації Держлікінспекції МОЗ А.Д.Захарин

МП

MD №008442


ФЕДЕРАЛЬНАЯ СЛУЖБА ПО НАДЗОРУ В СФЕРЕ ЗДРАВООХРАНЕНИЯ И СОЦИАЛЬНОГО РАЗВИТИЯ

FEDERAL SERVICE OF HEALTH CARE AND SOCIAL DEVELOPMENT CONTROL

РЕГИСТРАЦИОННОЕ УДОСТОВЕРЕНИЕ
REGISTRATION CERTIFICATE
№ ФСЗ 2008/02305

от 16 июля 2008 года Срок действия: не ограничен.

Настоящее удостоверение выдано
АНПО "Международный Институт Биофизических Технологий", Россия, 113114, Москва, Дербеневская наб., д. 7, стр. 1
и подтверждает, что изделие медицинского назначения (изделие медицинской техники)
Анализатор формулы крови неинвазивный АМП (см. Приложение на 1 листе)
производства
ООО НПК "Биопромин.", Украина, 61157, г. Харьков, ул. Селянская, д. 30а.

класс потенциального риска 2а ОКП 94 4310

соответствует комплекту регистрационной документации
КРД № 13386 от 27.03.2008

приказом Росздравнадзора от 16 июля 2008 года № 5541-Пр/08
разрешено к импорту, продаже и применению на территории Российской Федерации

Руководитель Федеральной службы по надзору в сфере здравоохранения и социального развития Ю.В. Юргель


МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РЕСПУБЛИКИ БЕЛАРУСЬ

РЕГИСТРАЦИОННОЕ УДОСТОВЕРЕНИЕ

№ ИМ-7.96780

Настоящее удостоверение выдано
Научно-производственный комплекс Биопромин ООО г. Харьков, УКРАИНА
и является подтверждением того, что Министерством здравоохранения Республики Беларусь зарегистрирована
Анализатор неинвазивный формулы крови АМП, ТУ У 33.1-22716816-001:2006; см. приложение, всего номеров регистрации - 1

Тип: медицинская техника

Изготовитель: Научно-производственный комплекс Биопромин ООО г. Харьков, УКРАИНА

и разрешены к производству, реализации и медицинскому применению на территории Республики Беларусь.

В соответствии с руководством по эксплуатации

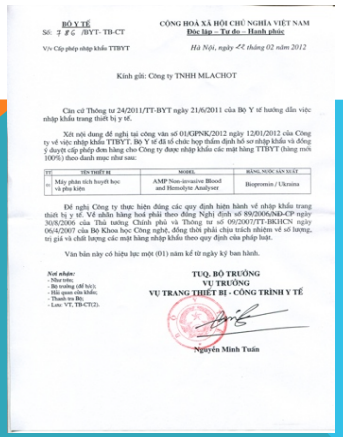
Регистрационный номер: Мз-7.113691-0907

Регистрационное удостоверение не является обязательством к закупке данных изделий медицинской техники.

Дата государственной регистрации: 30.07.2010 г. Действительно до: 30.07.2015 г.

Заместитель Министра В.Н. Качан

№ 0008746


BỘ Y TẾ
Số: 7 8 6 /BYT- TB-CT
V/v Cấp phép nhập khẩu TTBYT

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Hà Nội, ngày 06 tháng 02 năm 2012

Kính gửi: Công ty TNHH MLACHOT

Căn cứ Thông tư 24/2011/TT-BYT ngày 21/6/2011 của Bộ Y tế hướng dẫn việc nhập khẩu trang thiết bị y tế.

Xét nội dung đề nghị tại công văn số 01/GPNK/2012 ngày 12/01/2012 của Công ty về việc nhập khẩu TTBYT; Bộ Y tế đã tổ chức họp thẩm định hồ sơ nhập khẩu và đồng ý duyệt cấp phép đơn hàng cho Công ty được nhập khẩu các mặt hàng TTBYT (hàng mới 100%) theo danh mục như sau:

TT	TÊN THIẾT BỊ	MODEL	HÃNG, NƯỚC SẢN XUẤT
1	Máy phân tích huyết học và phụ kiện	AMP Non-invasive Blood and Hemolyte Analyser	Biopromin / Ukraina

Đề nghị Công ty thực hiện đúng các quy định hiện hành về nhập khẩu trang thiết bị y tế. Về nhãn hàng hoá phải theo đúng Nghị định số 89/2006/NĐ-CP ngày 30/8/2006 của Thủ tướng Chính phủ và Thông tư số 09/2007/TT-BKHCN ngày 06/4/2007 của Bộ Khoa học Công nghệ, đồng thời phải chịu trách nhiệm về số lượng, trị giá và chất lượng các mặt hàng nhập khẩu theo quy định của pháp luật.

Văn bản này có hiệu lực một (01) năm kể từ ngày ký ban hành.

Nơi nhận:
- Như trên;
- Bộ trưởng (để b/c);
- Hải quan cửa khẩu;
- Thanh tra Bộ;
- Lưu: VT, TB-CT(2).

TUQ. BỘ TRƯỞNG
VỤ TRƯỞNG VỤ TRANG THIẾT BỊ - CÔNG TRÌNH Y TẾ

Nguyễn Minh Tuấn


МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РЕСПУБЛИКИ КАЗАХСТАН

РЕГИСТРАЦИОННОЕ УДОСТОВЕРЕНИЕ

РК-МТ-5№007415

В соответствии с Кодексом Республики Казахстан «О здоровье народа и системе здравоохранения», настоящее регистрационное удостоверение выдано производителю медицинской техники: Научно-Производственный комплекс «БИОПРОМИН» ООО

Страна-производитель: УКРАИНА

в том, что медицинская техника:
Анализатор неинвазивный формулы крови АМП (1.Анализатор неинвазивный формулы крови АМП, 2.Кабель связи USB прибора с компьютером, 3.Программное обеспечение, 4.Кабель с пятью термопреобразователями, 5.Блок питания)

зарегистрирована и разрешена к применению в медицинской практике на территории Республики Казахстан.

Дата государственной регистрации (перерегистрации) 13 апреля 2010г.
Действительно до 13 апреля 2015г.

ПРЕДСЕДАТЕЛЬ КОМИТЕТА КОНТРОЛЯ МЕДИЦИНСКОЙ И ФАРМАЦЕВТИЧЕСКОЙ ДЕЯТЕЛЬНОСТИ


中华人民共和国
医疗器械注册证
PEOPLE'S REPUBLIC OF CHINA
REGISTRATION CERTIFICATE FOR MEDICAL DEVICE

注册号：国食药监械（进）字 2010 第 2400855 号
REG. NO.: SFDA(J) 20102400855

乌克兰 研究制造联合企业 "比奥普洛明" 有限公司：
你单位生产的无创血液分析仪，经审查，符合医疗器械产品市场准入规定，准许注册，自批准之日起有效期四年。

特此证明。

Research and Production Complex "Biopromin" Ltd:
This is to certify that the medical product Noninvasive Hemogram Analyser manufactured by your company has been inspected by our office and is permitted to register on the Chinese market. This registration certificate is valid for four years from the date of issue.

国家食品药品监督管理局
State Food and Drug Administration
2010年4月13日

附 件：医疗器械产品注册登记表
ATTACHMENT: MEDICAL DEVICE REGISTRATION RECORD

No.1000238