UCT

UNIVERSAL CANCER TECHNOLOGIES

Brief Overview
2022

About Us

UCT

Why UCT was formed

The Cancer Problem

Late cancer detection kills 10 million people and leads to costs of over 1 trillion dollars annually.

3 of 4

cancers are detected in the late stages III and IV

1 in 10

cancers detected in stage IV, survive 5 years from diagnosis

9 of 10

cancers detected in the early stages (I or II) survive 5 years after diagnosis

Universal Cancer Technologies

Vision & Mission

Vision

UCT’s vision is to be a global leader in early cancer detection technology.

Leadership

Mission

UCT’s mission is detect cancer at the earliest stages, enhancing lives and increasing survival rates.

Detection

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UCT is an emerging biotechnology company that has developed a sensitive cancer test that can reliably measure the amount of N-glycoprotein CA-62 biomarker in the subject’s sample from a routine blood draw. The test can detect the majority of cancers at all stages (stage I through IV), even before a subject may become symptomatic.

YOUR TITLE

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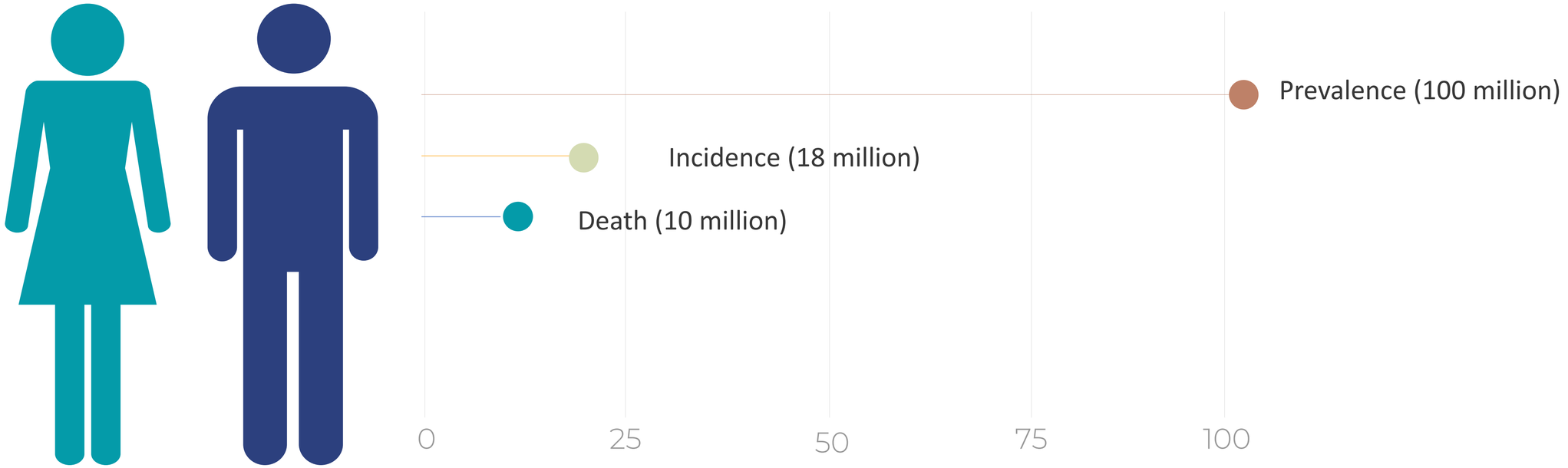
The challenge

The cost of cancer



Global Cost ($1.16 Trillion USD)

Cancer costs over $1 trillion dollars and kills 10 million annually

CA-62 Early Detection

UCT's CA-62 Biomarker Cancer Test can save over $100 billion and 2 million lives annually

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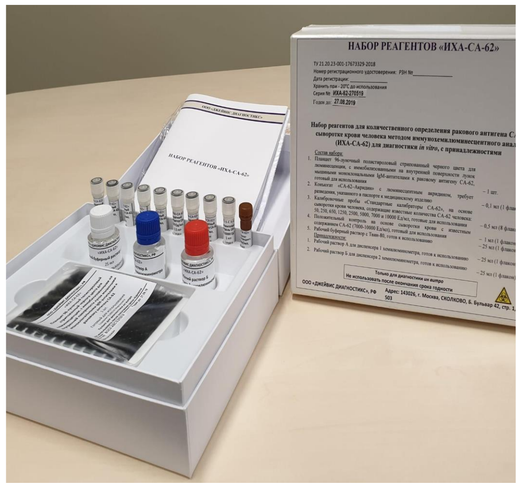


CA-62 Biomarker Cancer Test

UCT Cancer Test

UCT was founded on a unique history of research surrounding specific receptors. The receptors, found on the surface of epithelial cancer cells, can be detected and quantified from a single blood draw with high levels of specificity and sensitivity. The team at UCT has developed a robust test kit, confirmed by results from over 7,000 human samples.

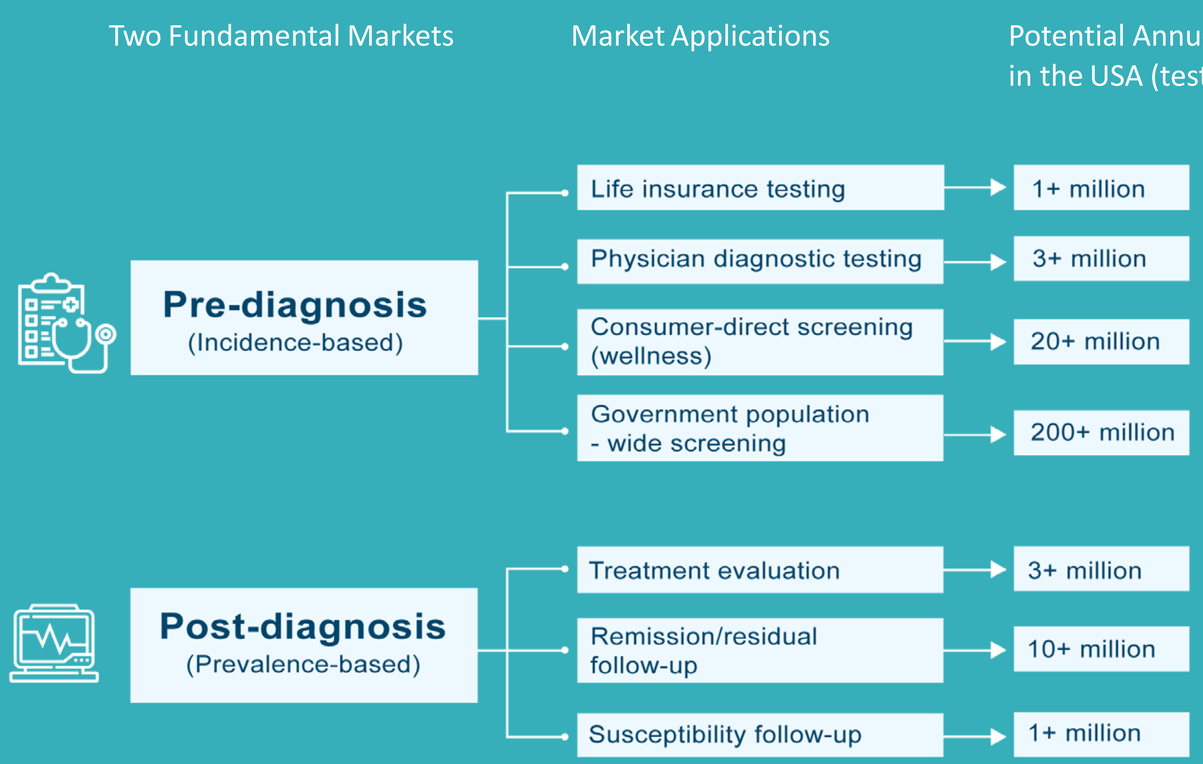
UCT CA-62 biomarker cancer test kit

How it works

- Proven results from over 6,000 human blood samples
- Sensitivity 90-95%
- Specificity 90-95%
- For Stages I & II for various cancers

Use cases

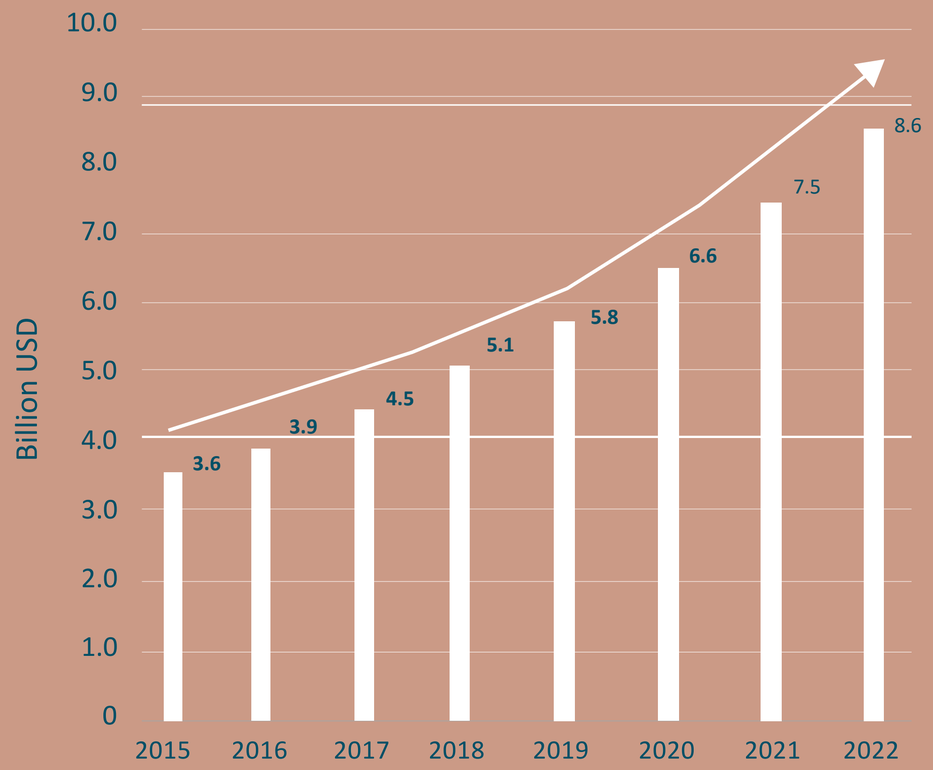
CA-62 use cases include entire cancer treatment cycle and commercial screening markets



Opportunity

Oncological biomarkers market - USA

Source-STATISTA



Global Cancer Biomarker Market Size

15B 2020(E) → **30B** 2027(P)

Liquid biopsies market is expected to double in the next 7 years

Commercial Biomarkers - USA (2020E)

Marker	Number of tests	Market size
PSA	20.0 million	3.0 B
CA-125	7.5 million	0.4 B
BRCA 1/2	0.5 million	1.5 B

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The only early detection test

- UCT will be the only early phase detection test on the market covering all applications
- Most competitor cancer tests on the market focus on either detecting a cancer type OR the application

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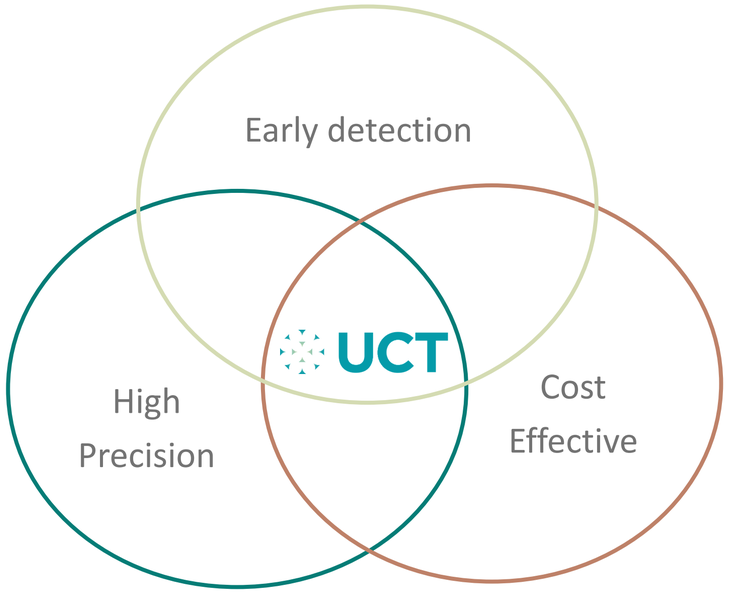
CA-62 compared to DNA assays



Feature	CA-62	DNA-assays
Early-stage precision	High (>90%) ✓	Low (~40%)
Cancer site ID	Not yet	Yes ✓
Recurrence test	Yes ✓	Yes ✓
Treatment effectiveness	Yes ✓	No
Wholesale cost @ scale	Low (<$50) ✓	High (>$500)
Equipment cost	Low (<$50K) ✓	High (>$2MM)

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About UCT

Universal Cancer Technologies

Leadership

CEO

Viatcheslav Kondratiev

M.Sc., MBA

Canada

20 years of experience in senior management positions and international drug/medical device development

Head of In-Vitro Diagnostics

Janetta Tcherkassova

Ph.D. CRC

Canada

Over 15 years of the experience in the cancer in-vitro diagnostics.

Senior Research Scientist

Euvgeni Klinski

Ph.D.

Canada

Over 15 years of the senior scientist position in the research of the cancer drug delivery systems

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Advisors

Scientific Advisor

Ricardo Moro

M.D.

Canada

President of ISOBM - International Society of Oncology & Biomarkers

Scientific Advisor

David Berz

MD, Ph.D., MPH

USA

Member of the International Association for the Study of Lung Cancer, Melanoma Research Society, the American Society of Clinical Oncology and the American Society of Hematology

Business Advisor

Stéphane Gagné

MBA

Canada

Chairman of the Steering Committee of Nanomedicine Canada, CEO of Immugenia Inc., former CEO Ovensa Inc., VP of Radient Technologies and Atrium Innovations

Medical Advisor

Vera Gorbunova

M.D.

Russia

Member of the American Society of Clinical Oncology & New York Academy of Sciences

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UCT company timeline

2012
CA-62 Biomarker test for cancer conceived

2015-2017
Initiated testing of 1,600+ human serum samples for various cancers

2018
UCT officially established in Toronto, Canada and UCT subsidiary JVS Diagnostics LLC.
ISO 13485 R&D Centre with laboratory and manufacturing

2018 Meetings
UCT presents CA-62 (MEC) technology: Open Innovations Forum, Oncological Congress & KPMG in Toronto, Canada

October 17, 2018
UCT raised US$400,000 funding

December 2018
UCT begins clinical trials in support of medical device registrations in Russian Federation & Kazakhstan. CA-62 test kit and protocols created

2019 Meetings
13th Annual Biomarkers & Immuno-Oncology World Congress, USA.
MedInvest Club Conference, Russia. World Cancer Leaders, Kazakhstan

October 4, 2019
UCT test kit certified by Healthcare Administration of Kazakhstan

April 3, 2020
UCT test kit certified Russian Federation Federal Heath Care Administration

2020
UCT files international, US and Eurasian patent for test kit

October 19, 2020
Russian Federation grants patent for test kit

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The future of cancer testing is here today with UCT

January 14, 2021
UCT files second Patent Cooperation Treaty (PCT) application for “New cancer antigen for early cancer detection”

January 27, 2021
Kazakhstan licenses UCT MEC lab for test diagnostic

August 2021
Developing of a training program for UCT CA-62 test use by family Physicians and Oncologists

July 2021
Clinical diagnostic lab opens in Kazakhstan

September 20, 2021
CA-62 test presented at 4th International Forum of Oncology and Radiotherapy, Moscow.

September 2021
Initiate EU authorization process with the EUROPEAN MEDICINES AGENCY
License agreement to market the test in the Czech Republic, Slovenia, Hungary, Poland

November 2021
Commercial clinical diagnostic laboratory acquired in Moscow, Russia.
Second patent for “New cancer antigen for early cancer detection” pending

December 2021
Initiate of authorization and Test Kits manufacturing process in India

February 2022
EURASIAN patent “Set of reagents for detecting a marker of epithelial carcinomas” granted.
US patent “Set of reagents for detecting a marker of epithelial carcinomas” pending

June 23, 2022
Diagnostic efficacy of CA-62 and Ca-15-3 biomarker's blind prospective-retrospective clinical study of 488 serum samples for early-stage breast cancer results published in Cancer Biomarkers journal

July 11, 2022
Blind clinical study for early-stage variable cancer started in US

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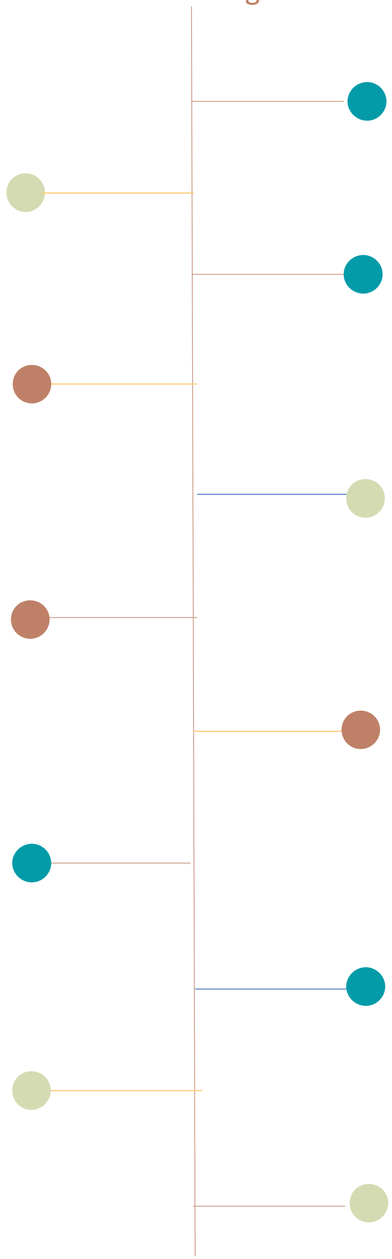
The future of cancer testing is here today with UCT



October 12-17, 2022
UCT participates at the 46th International Society of Oncology and Biomarkers (ISOBM) Congress, Bled, Slovenia.

December 2022
National Phase Entered in EU and India of International Application № PCT/RU2020/000250

Title: CANCER ANTIGEN FOR EARLY CANCER DETECTION

November 17-18, 2022
UCT participates at the 2nd International Conference on Global Health and Nutrition in Paris, France

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CA-62 Biomarker Cancer Test

MEC Lab Kazakhstan

UCT Kazakhstan Subsidiary beautiful modern laboratory facility now open for testing.

UCT CA-62 biomarker cancer test kit

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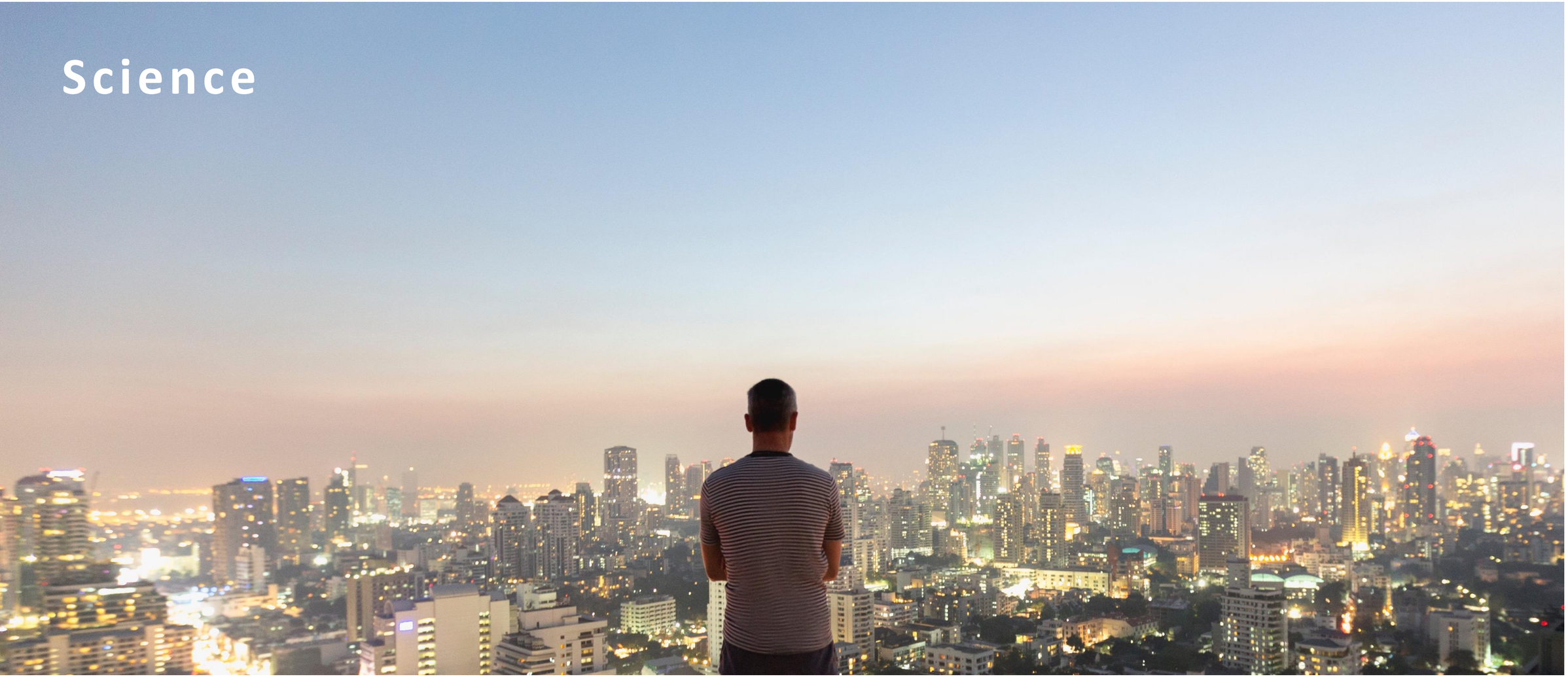
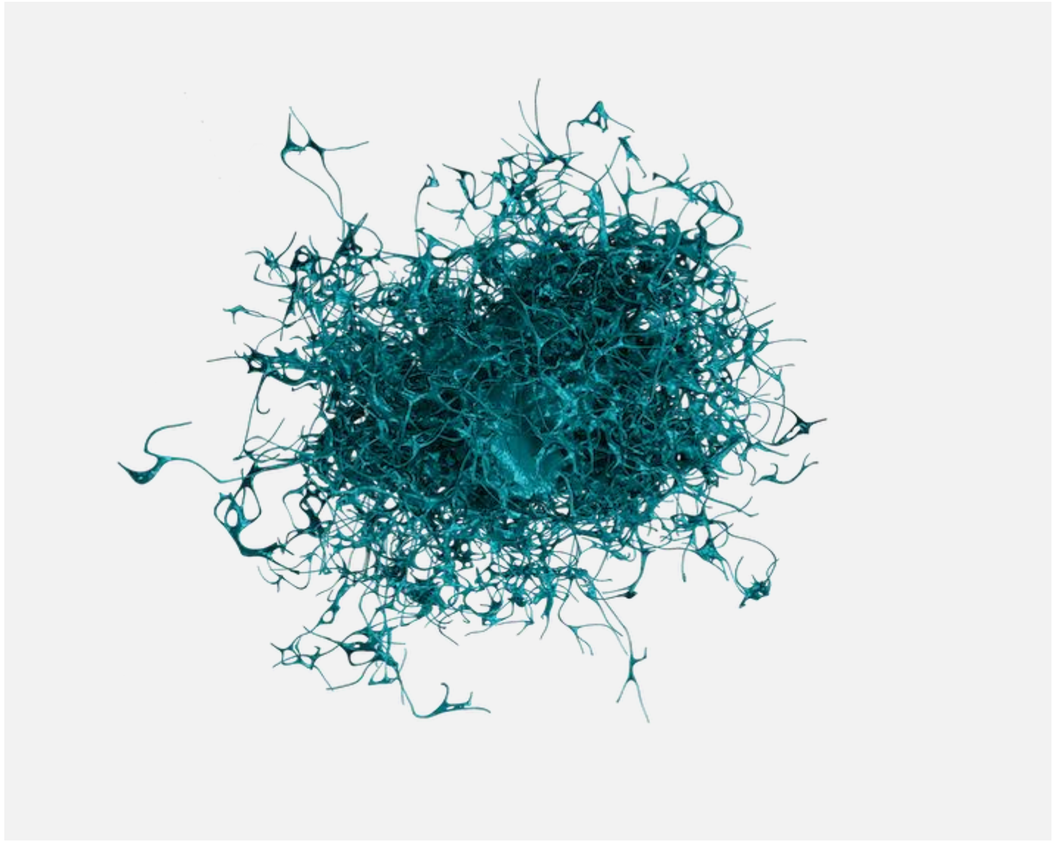
Science



UCT CA-62 Biomarker Cancer Test

How does it work?

UCT’s testing technology detects and quantitates the CA-62 biomarker specifically for epithelial carcinomas wherever they are in the body. The glycoprotein CA-62 appears uniquely on the surface of cancer cells. This biomarker enters the intracellular space and then circulates in the bloodstream where it can be detected by UCT’s CA-62 Biomarker Cancer Test. Quantitation allows for the determination of the likelihood of the presence of cancer in a patient with high sensitivity and specificity. Levels of CA-62 are highest during the early stages of cancer making it an exceptional tool for reliable early detection for a range of epithelial cancer types.



Advantages

UCT's innovative CA-62 Biomarker Cancer Testing technology has significant advantages over other well-known cancer markers:

- High sensitivity and specificity in early stages (I & II), including carcinoma in-situ (stage 0)
- Test is NOT invasive – routine blood draw
- Fast results – quick turnaround time
- Robust platform technology
- Easily scalable test
- Cost effective test
- Cost effective results

Earlier detection can mean more effective treatments and higher survivability for patients around the globe.

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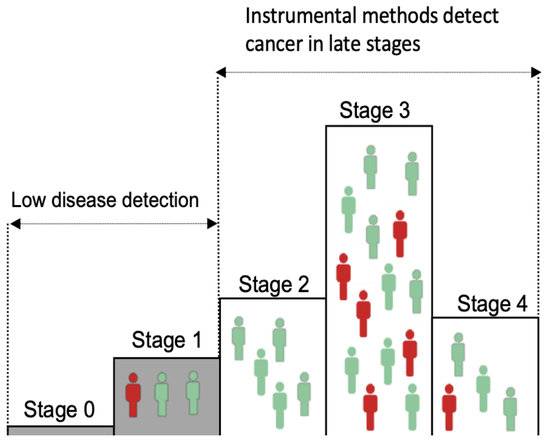
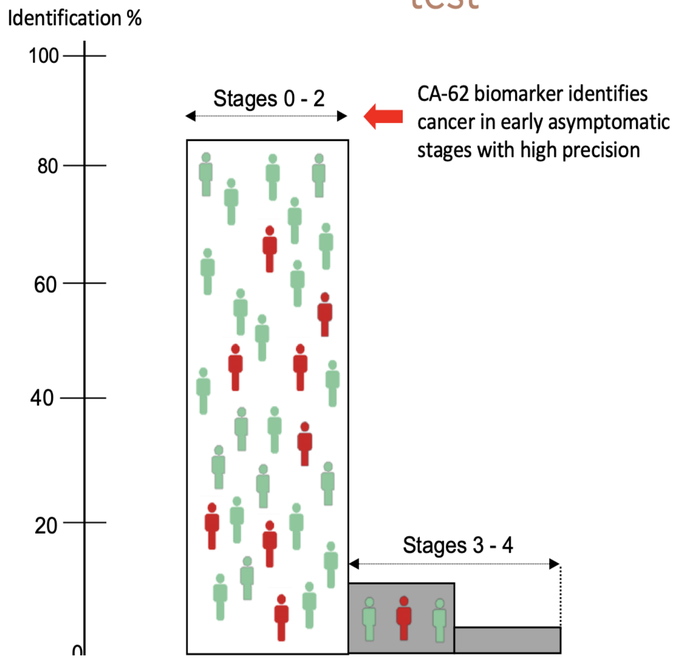
Current conventional methods



UCT CA-62 biomarker test



UCT CA-62 Biomarker Cancer Test

Screening

The majority of cancers are being detected at advanced stages, when the clinical prognosis is unfavorable and can results in a higher mortality rate. This is primarily because cancer does not typically become symptomatic until these later stages. Screening for cancer within a generally-healthy population using the highly sensitive UCT CA-62 Biomarker Cancer Test effectively detects a range of cancers from Stage I onward.

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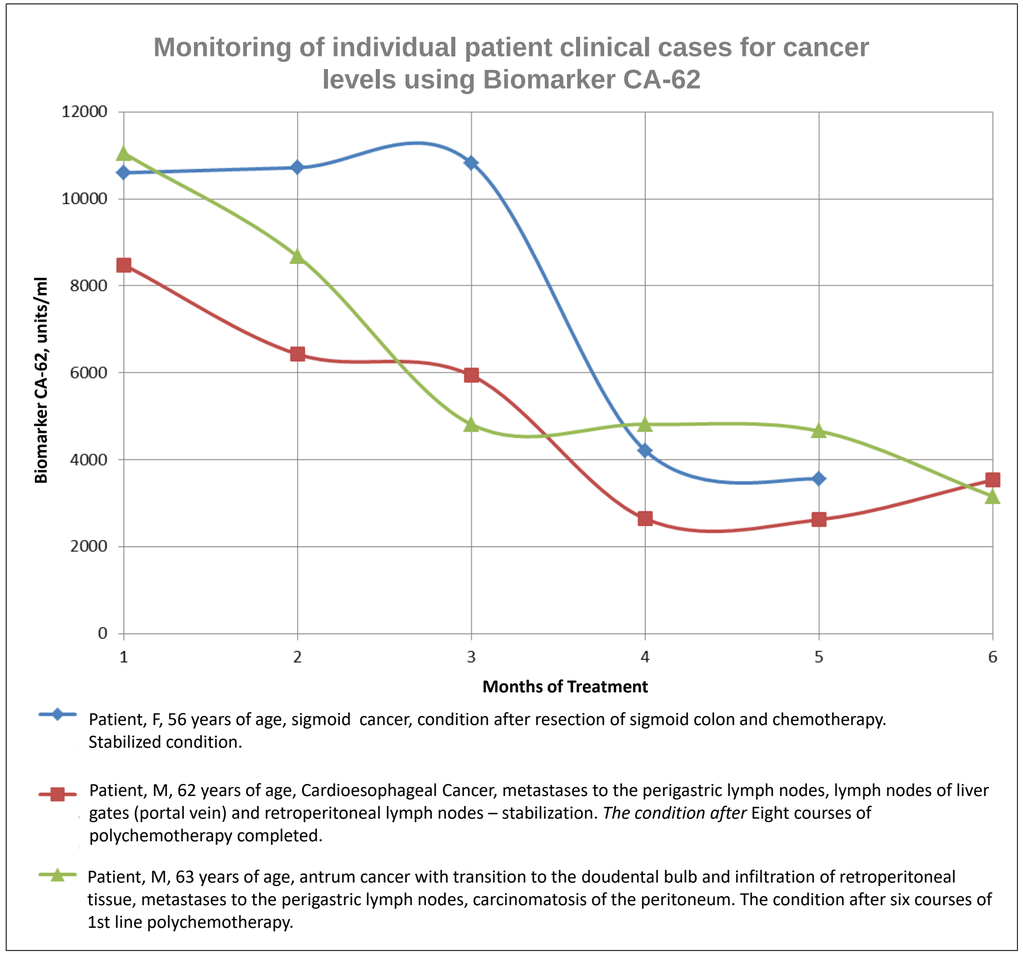
UCT CA-62 Biomarker Cancer Test

Monitoring

Patients with disseminated cancers (carcinomas) can be monitored as a growth inhibition indicator using the UCT CA-62 Biomarker Cancer Test. The rapid results may be useful in the assessment of the ongoing treatment success and for the timely detection of cancer chemotherapy resistance. This allows oncologists to make timely decisions regarding the modification or replacement of prescribed chemotherapy treatments based on real-time results. At present there are no other highly sensitive biomarkers that can reflect the tumor response to an ongoing cancer therapy. UCT's innovative testing technology can also be used in a clinical practice to monitor malignant neoplasms of the gastrointestinal tract, ovaries, lungs, large intestine, and rectum.



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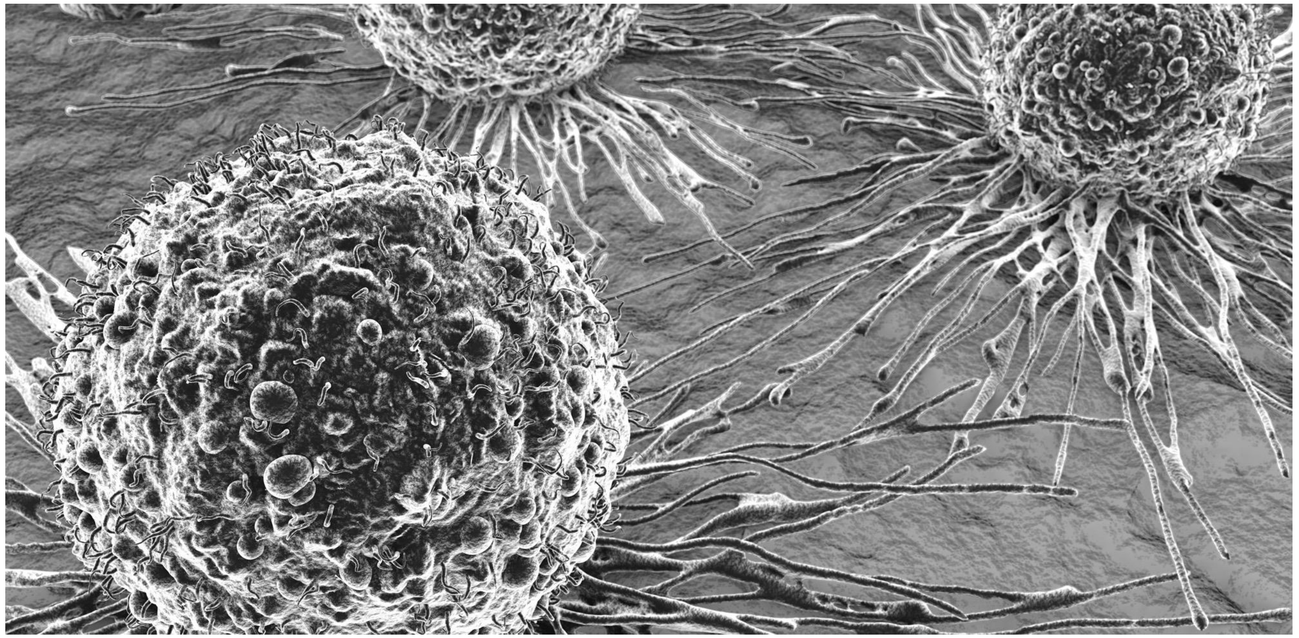

UCT CA-62 Biomarker Cancer Test

Recurrence

Early detection of cancer recurrence is now possible using the UCT CA-62 Biomarker Cancer Test. The dynamics of the CA-62 biomarker can serve as a significant prognostic factor for the early detection of cancer recurrence. A steady or sharp increase in biomarker's level during the remission is likely to be related to continued tumor growth and disease progression, which can be confirmed using conventional instrumental methods such as NMR, CT-scan, an ultrasound etc.

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UCT CA-62 Biomarker Cancer Test

Clinical Results

UCT has performed the CA-62 Biomarker Cancer Test on over 7,000 human blood samples internationally.

Test results demonstrate high sensitivity (>90%) and **specificity of 95%,** even for very early stages of most types of cancer, including cancer in-situ.

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Biomarker Comparison

The results of these studies clearly showed that UCT's CA-62 Biomarker Cancer Test was able to detect cancer in these samples with >90% sensitivity and 95% specificity. The data generated supported the approval of the medical device filings in the Russian Federation and Republic of Kazakhstan bringing this powerful testing technology to patients in its first two markets.

The table summarizes the sensitivity of the UCT's CA-62 Biomarker Cancer Test as compared to other available biomarkers for specific epithelial cancer types.

Various Carcinomas in Comparison to Healthy Controls & Sensitivity of Different Biomarkers

Cancer Diagnosis	Biomarker	Sensitivity at 95% Specificity	Area under curve (AUC)
Stomach Cancer	UCT CA-62	95%	0.957
	CEA	52%	0.733
Colorectal Cancer	UCT CA-62	94%	0.982
	CEA	72%	0.886
	CA 19-9	40%	0.790
Breast Cancer	UCT CA-62	94%	0.986
	CEA	39%	0.723
	CA 15-3	41%	0.739
Prostate Cancer	UCT CA-62	90%	0.915
	PSA	37%	0.612
Ovarian Cancer	UCT CA-62	92%	0.935
	CA 125	60%	0.712
	CA 74-4	52%	0.640

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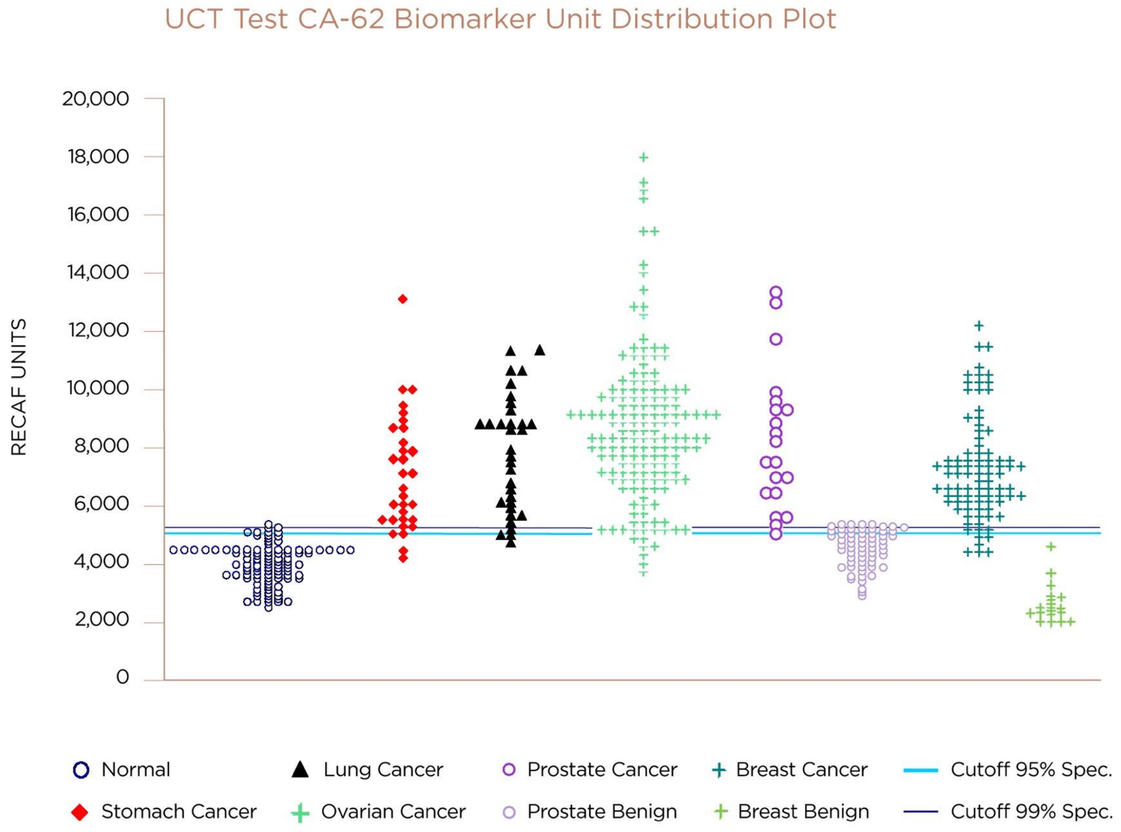
Variety of Cancers

The UCT CA-62 Biomarker Cancer Test has been challenged against a number of different epithelial cancer types. This graph marks the level of CA-62 biomarker (RECAF units) measured in samples from studies. The horizontal line indicates the minimum level of CA-62 biomarker that indicates the likely presence of cancer in the patient. Note that the results for independently confirmed benign cases show a distribution of results all below this line indicating the absence of cancer. The data plotted above the line shows the distribution of CA-62 biomarker levels measured in subjects confirmed with a form of cancer.



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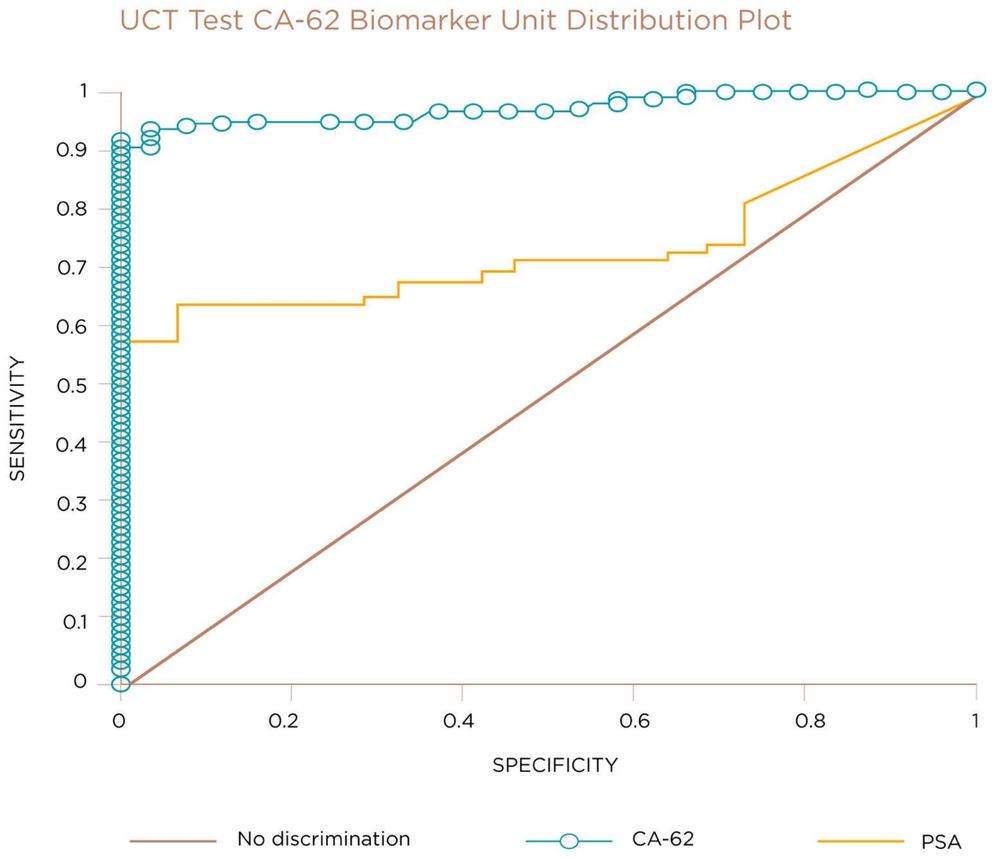

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Example

Prostate Cancer Test

One type of cancer that can impact a large proportion of the male population is prostate cancer. Currently the main test deployed to detect prostate cancer is the PSA marker. The graph compares the sensitivity and specificity of the PSA and UCT CA-62 biomarker tests, on approximately 2,000 subject samples. While the conventional PSA marker test showed sensitivity of approximately 60% , UCT's CA-62 Biomarker Cancer Test provided a sensitivity of over 90% and returned much fewer false positives. When UCT's CA-62 Biomarker Cancer Test has been used for prostate cancer detection, it has demonstrated superior sensitivity and specificity to the conventional PSA test.

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Accelerating Cancer Detection

- Early detection
- >90% selectivity
- 95% sensitivity
- Detects range of cancers
- Non-invasive
- Cost effective

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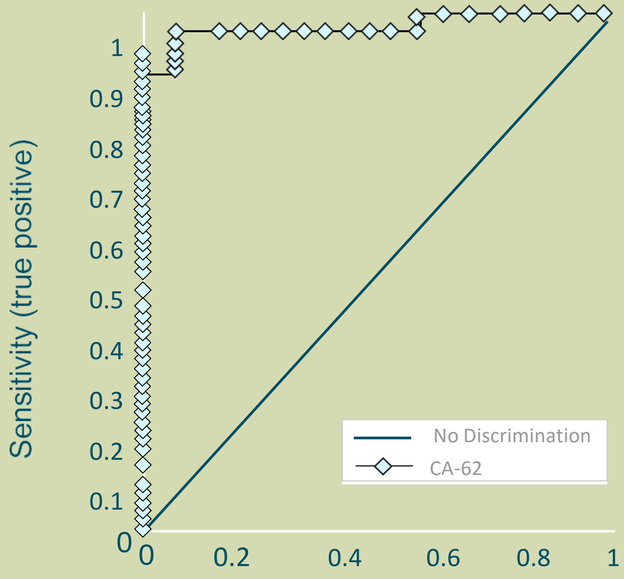
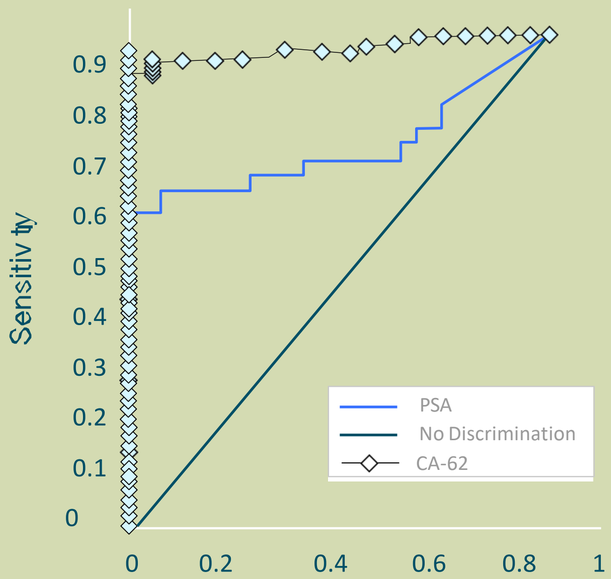
ROC curves from various studies



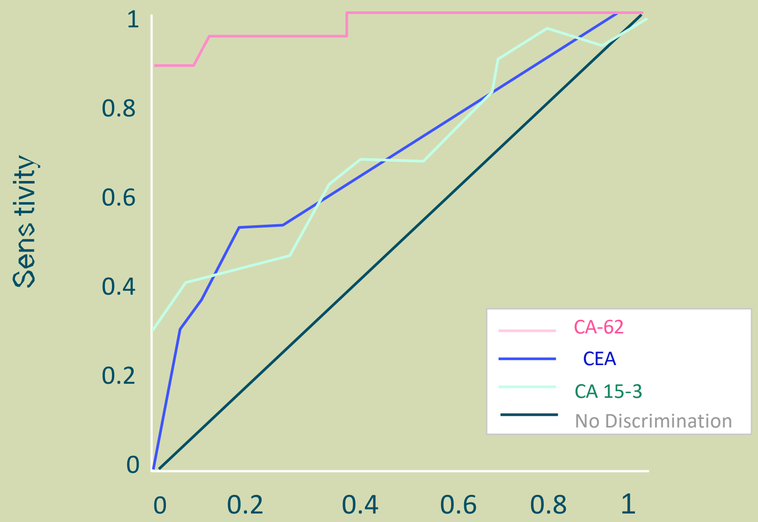
1 - Specificity (False Positives)

Lung Cancer > 200 Data Points



1 - Specificity

Prostate Cancer > 2000 Data Points



1 - Specificity

Breast Cancer (Total Amount) > 600 Data Points

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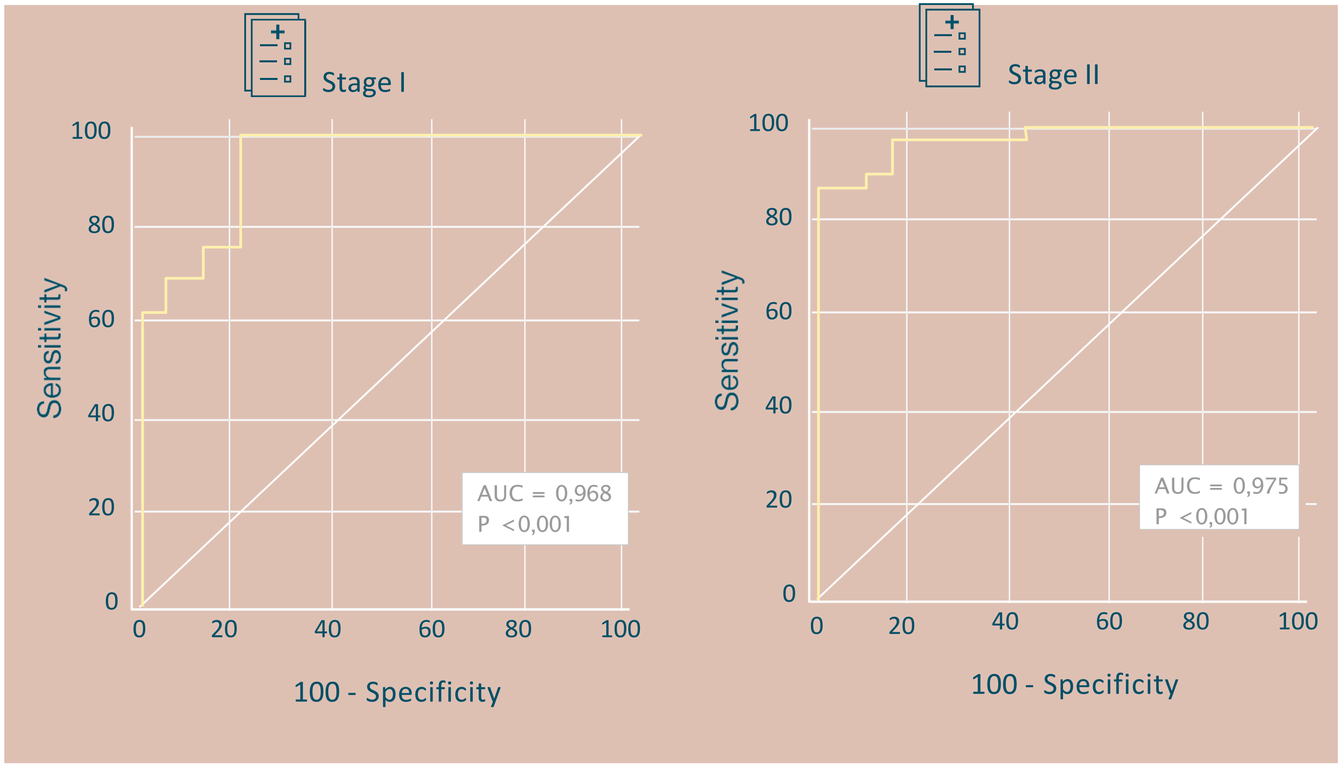
ROC curves from various studies

ROC Curve		
Variable	Stage I	
Classification Variable	Diagnosis	
Sample Size	48	82
Positive Group[a]	12 (25.00%)	46 (56.10%)
Nagative Group[b]	36 (75.00%)	36 (43.90%)
[a] Diagnosis=1		
[b] Diagnosis=0		
Disease Prevalence	Unknown	
Area Under The Curve (AUC)		
Area under The Curve[a]	0.968	0.975
Standard Error	0.0213	0.0136
95% Confidence Interval[b]	0.871 to 0.997	0.913 to 0.997
z Statistic	21,944	34,924
Significance Level P (Area=0.5)	<0.0001	<0.0001
[a] DeLong at al., 1989		
[b] Binomial Exact		
Youden Index		
Youden Index J	0.8889	0.86
Associated Criterion	>3173	>5619
Sensitivity	100	86.96
Specificity	88.89	100



*A pilot study of the early stages of colorectal cancer in N.N. Blokhin Russian Cancer Research Center – 2019 (peer-reviewed publication

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Double Blind Clinical Trial Results

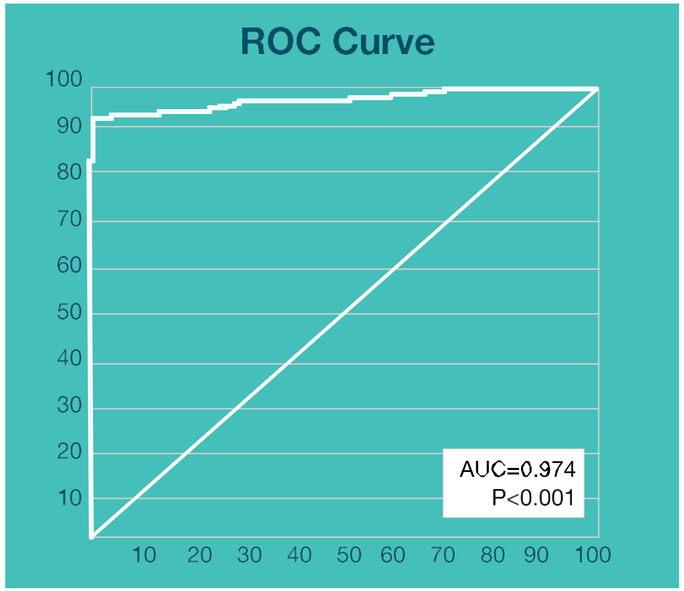
Test Validation Results for Authorities

1. Examining the CA-62 (U/ml) levels in various samples of human blood serum:

   - 150 serum samples from patients with histological confirmation of various cancer
   - 150 serum samples from conditionally healthy people

2. To confirm the diagnostic characteristics of the test, diagnostic sensitivity and specificity regarding the relationship of high levels of CA-62 (more than 5000 U/ml) with carcinogenesis, ROC analysis was performed.

3. Based on the analysis data, the optimal cut-off CA-62 level (5045 U/ml) was established.



ROC Analysis

Amount of Samples	300
Group of Sick[a]	150 (50,00%)
Group of Healthy[b]	150 (50,00%)
Area under The ROC Curve (AUC)	0,974
Standard Error[a]	0,0092
95% CI[b]	0,949 to 0,989
z Statistics	51,523
Significance Level P (Area=0.5)	< 0,0001
Cut off, CA 62 U/ml Estimated	>5045
Sensitivity	93,33
Specificity	99,33

[a] status=1 [b] status=0

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*Clinical trial results of in vitro diagnostic medical device “A set of reagents for the quantitative determination of cancer antigen CA-62 in human serum by chemiluminescence immunoassay (CLIA-CA-62)”

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Scientific Publications

1. J. Cherkassova, A. Prostyakova, S. Tsurkan, V. Ragoulin, A. Boroda, and M. Sekacheva. Diagnostic Efficacy of the new prospective biomarker's combination CA 15-3 and CA-62 for early-stage breast cancer detection: Results of the blind prospective-retrospective clinical study. Cancer Biomarkers, vol. Pre-Press, no. Pre-Press, pp. 1-13, 2022
2. A pilot clinical trial to monitor response to chemotherapy using the CA-62 marker of epithelial carcinomas. Khakimova Gulnoz G., Cherkasova Zhanneta R., Tsurkan Sergey A., Fedchikov Gleb A., Suganov Nikolay V., Gorbunova Vera A. Siberian Journal of Oncology, 2019, V.18, N.5, p. 18-28.
3. Tcherkassova J.R., Tsurkan S.A., Smirnova G.B., Borisova J.Y., R. Moro, and Treshalina H.M. Binding characterization of the targeting drug AIMPILA to AFP receptors in human tumor xenografts. Tumor Biology, 2017, Oct, 9, p. 1-10.
4. Tsurkan S., Tcherkassova J., Gorbunova V., Treshalina H. New drug AIMPILAa targeted to AFP receptor: oral anticancer therapy and biodistribution in vivo. Journal of Clinical Oncology, 2018, T. 15_suppl. C. e24232.
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8. Ricardo Moro, Janneta Gulyaeva-Tcherkassova, Petra Stieber. Increased AFP-Receptor (RECAF) values in the serum of patients with early stages of breast cancer. Journal of Current Oncology, 2012, Vol. 19, N.1, p. 1-8.
9. Janneta Tcherkassova, Carolina Abramovich, Rafael Moro, Chen Chen, Ralph Smit, Angela Gerber, Ricardo Moro. Combination of CA125 and RECAF biomarkers for early detection of ovarian cancer. Tumor Biology, 2011, Vol. 32, No.4, p.831-838.
10. Irene NG, Janneta Tcherkassova, Nina Lyubimova, Ricardo Moro. A new RECAF ELISA and Its Correlation with the Chemiluminescence RECAF Assay. Tumor Biology, 2008, V. 29 (Suppl. 1), p. 41.
11. Barry Dowell, Stephen Frost, Janneta Tcherkassova, Angela Gerber, Rafael Moro, and Ricardo Moro. Chemiluminescent assay (CIA) for the receptor of ALPHA FETOPROTEIN (RECAF) to separate cancer from normal sera. Tumor Biology, 2007, V. 28 (Suppl. 1), p.92
12. Janneta Tcherkassova, Ralph Schmid, Xiaolong Hu, Nina Lyubimova, Ricardo Moro. Point-of-care serum test for cancer detection based on the RECAF cancer marker. Tumor Biology, 2007, V. 28 (Suppl. 1), p.101
13. Ricardo Moro, Angela Gerber and Janneta Tcherkassova. High Discrimination between Prostate Cancer, Benign and Normal Serum Samples Using RECAF. Tumor Biology, 2006, V. 27 (Suppl. 2), p.57
14. R. Moro, J. Tcherkassova, A. Gerber. High discrimination between Prostate cancer, Benign and Normal serum samples using the cancer marker RECAF. Journal of Clinical Chemistry, 2005, V. 52, Suppl. 6, p. 26
15. https://secureservercdn.net/72.167.241.46/743.2ba.myftpupload.com/wp-content/uploads/2020/12/Ricardo2016NovaScience-122648.pdf
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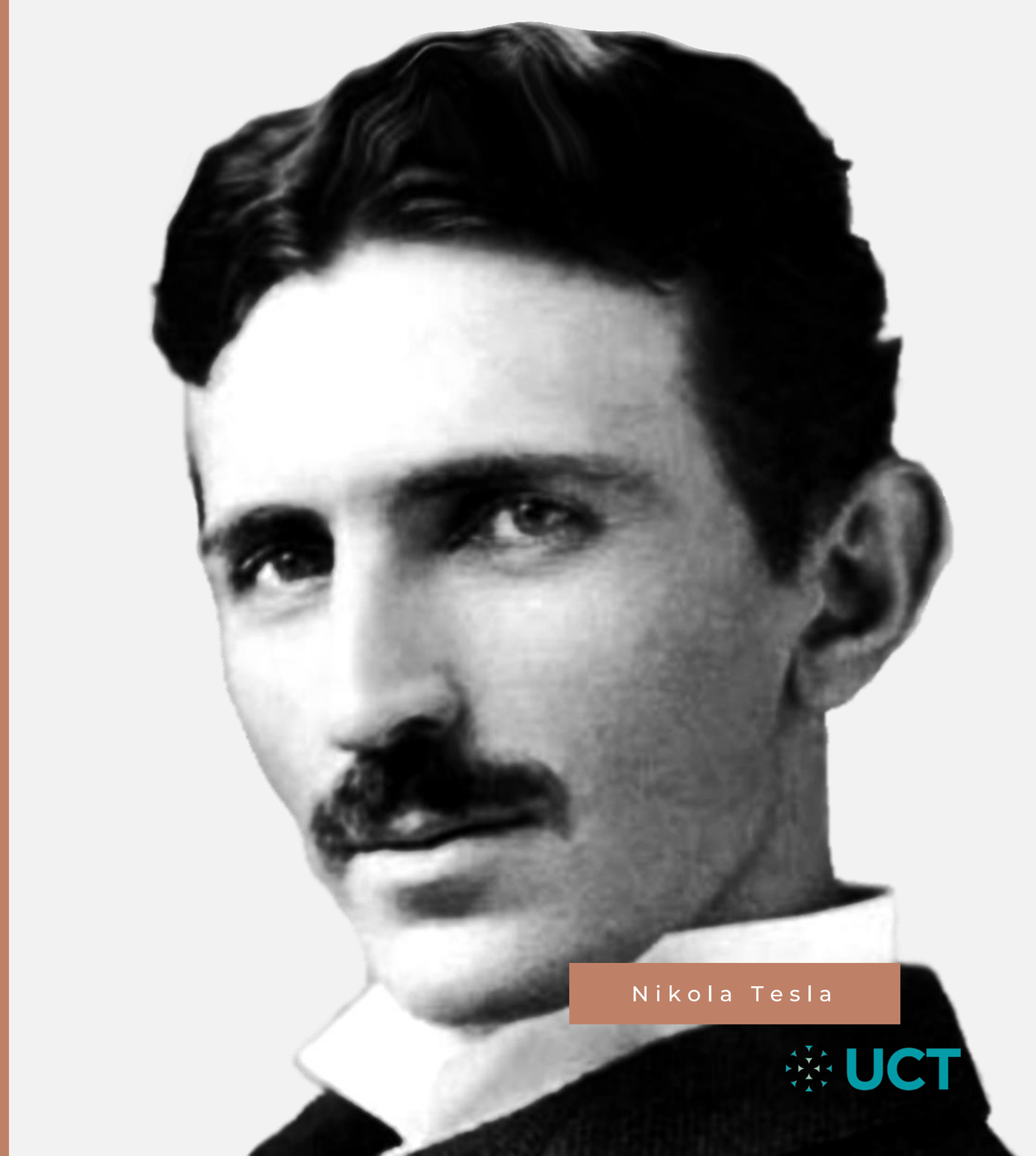
“Invention is the most important product of man’s creative brain.”



Nikola Tesla

Universal Cancer Technologies

Connect

800 Petrolia Road, Unit 3
Toronto, ON M3J 3K4
Canada
T/ 416-661-7890
E/ info@UCTtest.com

www.UCTtest.com

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