

LAB ON A CHIP VISCOSITY MEASUREMENT



Tarabios, a Healthcare Spin-Off from Koç University backed by Inventram.

Tarabios develops and commercializes a **Point-of-Care Blood Coagulation Diagnostics Device!**

- 6 yrs. of R&D done at Koç University including 2 patent applications
- \$700k funding by The Scientific and Technological Research Council of Turkey
- \$800k funding and seed capital by Inventram
- Resources of Koc Holding, incl. American Hospital and University Hospital at use
- Post-Doc, PhD, MSc students and lab technicians supported R&D



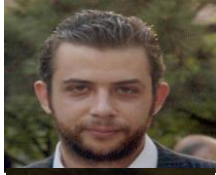
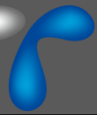
iNVENTRAM!

A technology and IP investment company with the objective of commercializing innovations via smart business models.

Owned by Koç Holding, Koç University, and Mitsui & Co.



Turkey's largest group with over US\$25bn revenues (2015)
Active in all major sectors: Energy, Life Sciences, Finance, Durable Goods, Automotive, Infrastructure, Education

**Gokhan Saglam, Interim CEO and Business Development Manager**

- Previously, Sales Manager at Mas, Natura, Cook Medical Inc; 7 yrs. of experience in medical devices
- MS & BSc in Biomedical Engineering, Baskent University

**Merve Gökçe, Product Development**

- BSc & MSc in Bioengineering, İstanbul Technical University

**Barış Karan, R&D Engineer**

- BSc in Electrics and Electronics Engineer, Koc University

Advisory Team & Board Members

**Prof. Dr. Hakan Urey, Scientific Advisor & Board Member**

- Ph.D. in EE, Georgia Institute of Technology. Awarded ERC Advanced Inv. Grant.
- >30 licensed patents (Microvision), Expertise on MEMS, Optics, Miniaturized systems

**Cem Soysal, Business Advisor & Board Member**

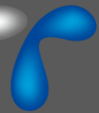
- General Manager, Inventram; 20 years experience in senior management
- Previously, General Manager of Vestelnet Online Communications Inc.
- Previously, Country Manager of Fujitsu-Siemens Computers, Group President of Dogan Holding

**Prof. Dr. Goksenin Yaralioglu, Technology Advisor**

- Ph.D. in EE, Bilkent U., 6 yrs. at Stanford Univ., Senior Director at Invensense, 2006-2012
- 12 patents, >90 publications, Expertise in MEMS product development and microfluidics

**Dr. Richard Dunn, Scientific Advisor**

- 10 yrs.s experience in coagulation medical device development with MEMS sensors
- Expertise in Product Development and Quality Control of Medical Devices



What is PT/INR Coagulation Test?

Patients with the following conditions require frequent/regular testing (>\$1.6bn Market) to manage their medication thus their clotting time:

- 1) Patients with Bleeding Disorders such as Hemophilia A&B, Factor II-V-VII-X-XII gene defects, or Von Willebrand's Disease
- 2) Patients on Warfarin (anticoagulation drug) Therapy to prevent
 - stroke
 - thrombosis and embolism
 - and treat Deep Vein Thrombosis

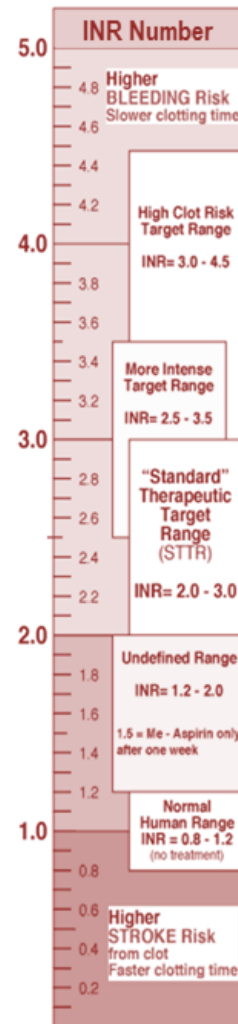
Frequent/regular testing at Premises means;

- Making frequent/regular visits to Doctor's office or Lab is very inconvenient especially for older people
- Usually an Exhaustive and a Time Consuming Process
- Although a time critical event, long process makes harder to manage the medication
- Sometimes test results may be inaccurate for many reasons then a fresh sample and retesting is required!

PT: Prothrombin Time Measures Clotting in Response to Thromboplastin

INR: International Normalized Ratio

$$INR = \left(\frac{\text{Patient PT}}{\text{Mean Normal PT}} \right)^{ISI}$$



A Strong Demand for Point-Of-Care PT/INR Self Testing Devices!



Tarabios POC PT/INR Diagnostic Device: Proprietary Fiber Optics Mechanical Measurement System



Working Prototype

- A mobile POC device for home use
- Simple and easy to use for self-testing
- Minimum blood sample requirement ($<8\mu\text{l}$)
- Calibration free cartridges
- Mechanical system independent from Heparin or Htc values
- Accurate Results by Magnetic Actuation and Optical Readout



Technology:

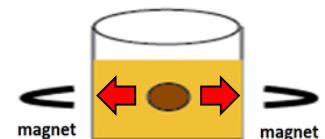
- Based on the same Principle used in Golden Standard
- Proprietary Fiber Optics Mechanical Measurement System
- Simple cartridge design for longer shelf life, high stability and low cost
- On screen fast measurement result (under a minute)

IP Info

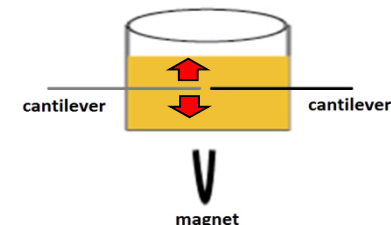
WO2015/033190 - 09.09.2013 : in US, EP, JP, CN local phase

WO 2012/059828 A2 - 30.09.2012: PCT approved

THE GOLDEN STANDARD (BALL BEARING)






OUR TECHNOLOGY



Large Market with High Growth Potential

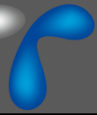
- Market Size is >\$1bn with 4% CAGR for the Next 5 Years according to Visiongain 2013 Report
- 2nd Largest Segment after Glucose Testing
- USA is the Largest Market followed by European Union
 - Reimbursements in many countries

Table 7.2 Leading National PT/INR Testing Market Forecast (\$m), 2011-2023

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
 USA (\$m)	294	312	331	351	368	387	402	418	435	448	457	466	471
CAGR (%)							5.3						2.7
 Europe (\$m)	205	219	234	249	263	277	290	302	314	327	337	343	350
CAGR (%)							6.0						3.2
 RoW (\$m)	141	173	216	268	314	348	390	427	456	490	522	533	548
CAGR (%)							18.5						5.8
Total PT/INR Testing (\$m)	640	704	781	867	945	1,012	1,082	1,147	1,205	1,265	1,316	1,342	1,369
CAGR (%)							9.2						4.0

Source: Visiongain 2013;





Monopolistic Market

Roche's CoaguChek dominates global markets by 66% !

- Roche continues to advertise in major newspapers⁽¹⁾.
- ITC, Alere, Abbott, and Coagsense are other players with FDA cleared devices but having **serious performance issues!**
 - In 2014, Alere's INRatio2 (FDA Class 1 device) recalled due to 18,924 Complaints

Major Companies willing to enter this market!

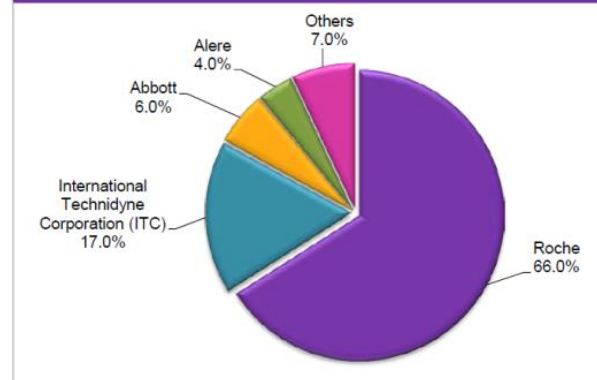
J&J, Danaher, Phillips, Samsung are a few...

- 2011, Siemens ordered Universal Biosensors to white label its devices
- 2010, Danaher offered Thoratec \$110mn for ITC
- 2010, Abbott exclusive licensed Coagsense, ended by 2013
- 2007, Alere acquired Hemosense for \$228mn

Further Opportunity in Immunoassay based POC Test Market which is over >\$15bn !

With additional R&D other tests may be done by our device: *Multiplexed Sepsis Panel, Cardiac Markers, Hepatitis, Tuberculosis, STD, i.e.*

Figure 8.2 Market Share (%) of Leading Companies in the POC PT/INR Testing Market, 2011



Source: Visiongain 2013

CoaguChek XS
Kişisel PT/INR Ölçüm Cihazı
Varfarin (Kan sulandırıcı) tedavisi gören hastalar için konfor ve kolaylık sağlar

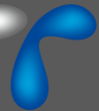
- Parmak ucundan tek damla kan ile bir dakika içinde hızlı ve güvenilir PT/INR ölçümü
- Evde, iş yerinde, seyahatte düzenli ve rahat ölçüm imkanı

Lütfen hekiminize danışınız.
Ürünle ilgili daha detaylı bilgi almak için web sitemizi ziyaret edebilir ve danışma hizmetini arayabilirsiniz.
www.coaguChek-tr.com
Ücretsiz danışma hattı: 0800 211 56 36
(CoaguChek® için kılavuz 3'ü kullayınız.)
(Hafta içi 8:00-17:00 arası arayabilir veya sizi arayabilmemiz için mesai saatleri dışında mesaj bırakabilirsiniz.)

CoaguChek® ve BECAUSE ITS MY LIFE Roche'un ticari markasıdır ©2016
Roche Diagnostics Turkey A.Ş.

CoaguChek®
Because it's my life

(1) An Ad from a major Turkish newspaper



POC PT/INR Devices for Professional and Home Testing (FDA/CE cleared)

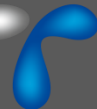
Company and its device	TARABIOS	Roche «Coaguchek»	Alere «INRatio2»	ITC «InRythm»	Coagusense «Coag-Sense»
Measurement Technique	Direct	Indirect	Indirect	Indirect	Direct
Cartridge Complexity	Low	Medium	Medium	Medium	High
Multiple Tests per Sample	Yes	No	No	Yes	No
Calibration	None	Code Chip	Manual Entry	Strip	Strip
Cartridge Price	est. \$4.00 (cost< \$1)	\$4.30	\$4.20	\$8.00-9.00	\$4.00
Reader Price	est. \$500 (cost< \$200)	\$600-700	\$600-700	\$1400-1500	\$600-700
Platform Technology	Yes	No	No	No	No
Sample Blood Amount (µL)	8 µl	10 µl	9.5 µl	25 µl	10 µl
Sample Addition	Direct	Direct	Direct	Direct	Transfer Tube

Round A for Final Product Development, Clinical Trials and EU Market Entry

	2017				2018				2019				2020				2021			
Tarabios Establishment																				
Product Development																				
Clinical Trials & CE Mark																				
Product Manufacturing																				
TR Sales																				
EU Sales																				
FDA Approval																				
US Sales																				
Worldwide Sales																				

Round A

Round B



Income Statement (in USD)	2017	2018	2019	2020	2021
Revenues	287.250	2.991.892	9.723.996	26.573.161	58.738.170
TR - Device Sales	135.000	270.000	372.000	420.000	444.000
TR - Cartridge	51.750	779.116	1.435.103	2.054.259	2.498.454
EU - Device	60.000	540.000	1.710.000	3.900.000	7.800.000
EU - Cartridge	40.500	1.402.776	5.854.392	16.332.672	36.068.823
US - Device	0	0	150.000	750.000	1.800.000
US - Cartridge	0	0	202.500	2.299.428	7.564.040
World - Device	0	0	0	687.500	1.925.000
World - Cartridge	0	0	0	129.302	637.853
COGS	163.350	1.278.097	4.015.092	10.899.232	23.862.830
Gross Profit	123.900	1.713.795	5.708.904	15.673.929	34.875.340
<i>Gross Profit Margin</i>	<i>43%</i>	<i>57%</i>	<i>59%</i>	<i>59%</i>	<i>59%</i>
General & Administrative Expenses	545.241	1.036.718	1.204.288	1.055.298	1.055.298
Sales & Marketing Expenses	37.000	243.164	505.053	1.160.004	2.412.975
R&D and Other Expenses	505.000	120.000	360.000	480.000	720.000
EBITDA	-963.341	313.913	3.639.562	12.978.627	30.687.066

Round A Investment Required For:

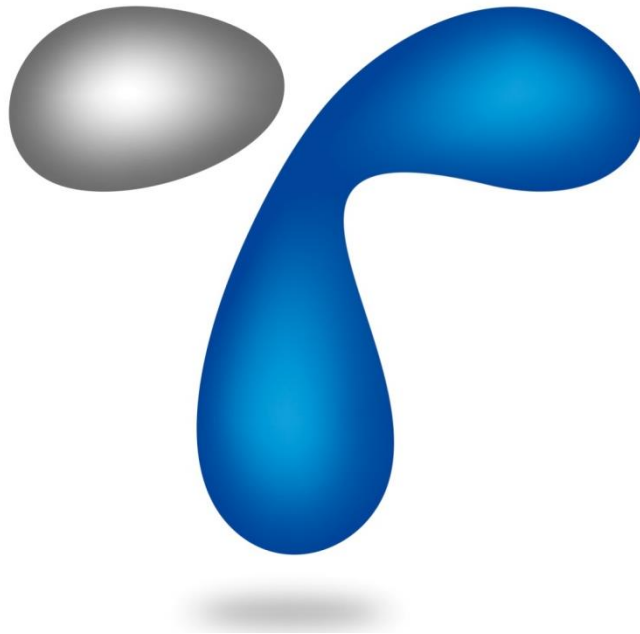
- Market Ready Product Development (+\$500k)
- EU Clinical Trials and CE Certification (+\$500k)
- Product and Cartridge Production (+\$500k)
- Distributor and Dealer Network Setup
- Sales Team and Marketing Activities

Multiple EXIT Opportunities by Y2019

- Potential Acquisition by Roche, Abbott, Danaher, J&J, etc.
- Licensing-out or selling IPs to major players
- Acquisition by Koç Holding
- IPO in major stock markets



THANK YOU!



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