



Innovation for life

Greyston Holding as

Hyperthermics
Holding 100%

Hyperthermics
Regensburg GmbH
100%

Life Capitol as
100%

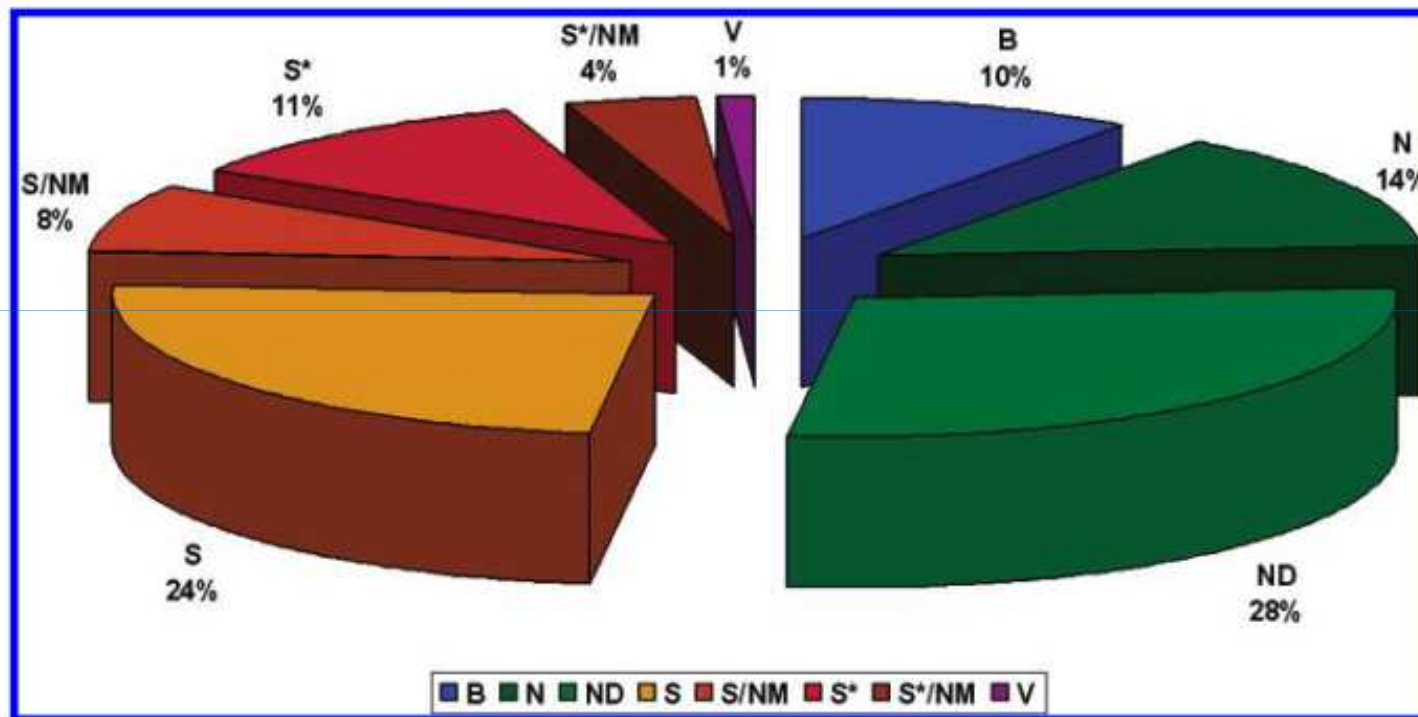
Life Science Nutrition
100%

Regenics as
51%

GenTel BioScience
52%

Innovation for life

Sources of New Drugs



All available anticancer drugs, 1940s–06/2006, by source ($N = 175$).

Natural Products as Sources of New Drugs over the Last 25 Years¹

David J. Newman* and Gordon M. Cragg

Natural Products Branch, Developmental Therapeutics Program, Division of Cancer Treatment and Diagnosis, National Cancer Institute-Frederick, P.O. Box B, Frederick, Maryland 21702

The Hyperthermophiles

Definition:

A hyperthermophile is an organism that thrives in extremely hot environments. The optimal growth temperature of hyperthermophiles is above 80°C.

Origin of hyperthermophilic heterotrophic H₂ producers

Pyrococcus (an archaeon) and *Thermotoga* (representing a bacterial phylum) are marine hydrothermal shallow water vents (e.g. Vulcano Island). Both organisms are strict anaerobes.



HYPERTHERMICS



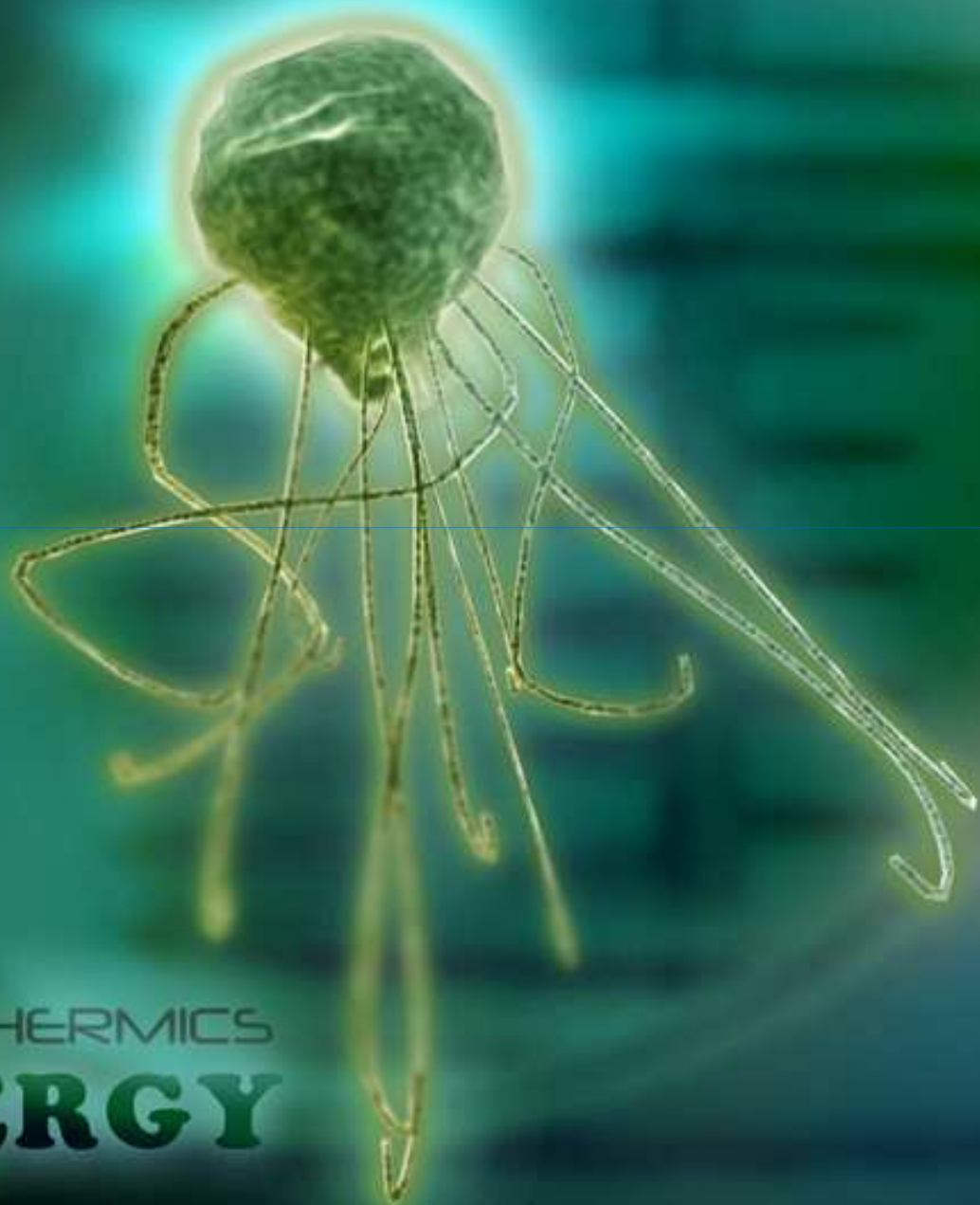
HYPERTHERMICS



CLIMATE CHANGING TECHNOLOGY

Applications

- Biogas/methane pretreatment
- Bioethanol pretreatment
- Life Science –SFI – UIB
- Biohydrogen – in the future ...



 HYPERTHERMICS
BIOENERGY

From one of 101 to the one...

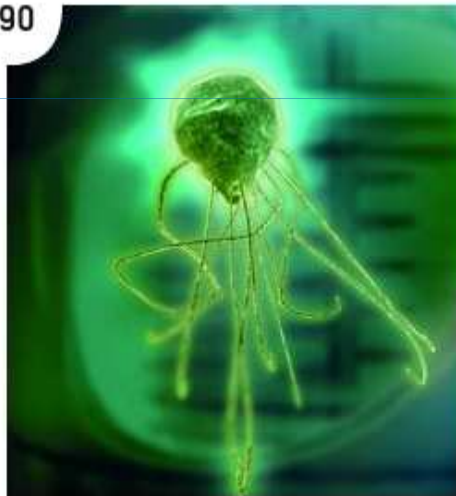


89



DD F
PO: **BIOCHAR –
BLACK GOL**

90



**A POTENT ENVIRONMENTAL
COCKTAIL**



NDAY

Thermophile bacteria don't look pleasant, but there is a lot of evidence that they can be good for the environment by accelerating the production of biogas. In Sweden, over 15 000 cars run on biogas, and by 2010 all petrol stations must supply bio-gas or bio-ethanol. Biogas from wet organic waste such as animal droppings and food waste is relatively simple to produce. It can be used for heating, or it can be upgraded to fuel – and in addition the by-products are ideal for soil improvement. Recently, the presence of certain bacteria has also aroused interest in biogas. The Norwegian firm **Hyperthermics** has discovered that thermophile bacteria, small creatures that are most comfortable in high temperatures, can accelerate the biogas process. By adding thermophile bacteria to the biomass in a biogas reactor and increasing the temperature to between 80 and 90 degrees centigrade, biogas is formed ten times as quickly with less energy use. Such a substantial reduction of time and money used in the production process is being viewed with great interest.

HYPERTHERMICS

Fermentation facility at the institute of microbiology of the University of Regensburg



Lehrstuhl für Mikrobiologie
Archaeenzentrum

 **HYPER THERMICS** Regensburg GmbH

3 kWh energy pr kg straw

**Combination of a HT fermentation with a mesophilic biogas fermentation
double methane production from straw.**

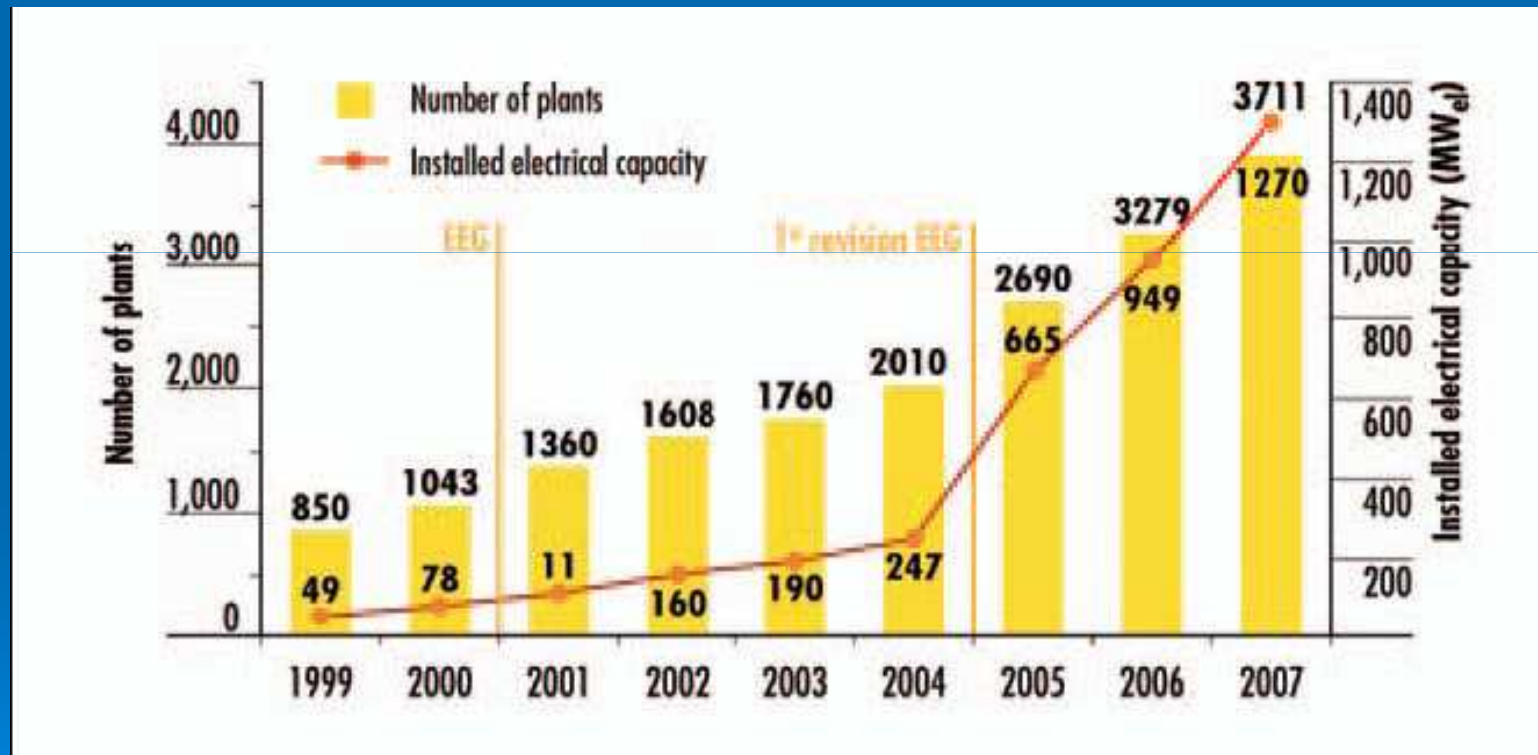
When the straw is pre-fermented in the HT process the biogas process yielded **249 NI** CH₄ per kg compared to 139NI – increase of 80% , corresponding to yield form energy crops. (tested by Bioreact, Germany according to DIN/VDI 4630)

Goal:

Production cost pr kWh(e) from biogas in a CPH unit today: 15 Eurocent

HT has potential to lower this by 30%.

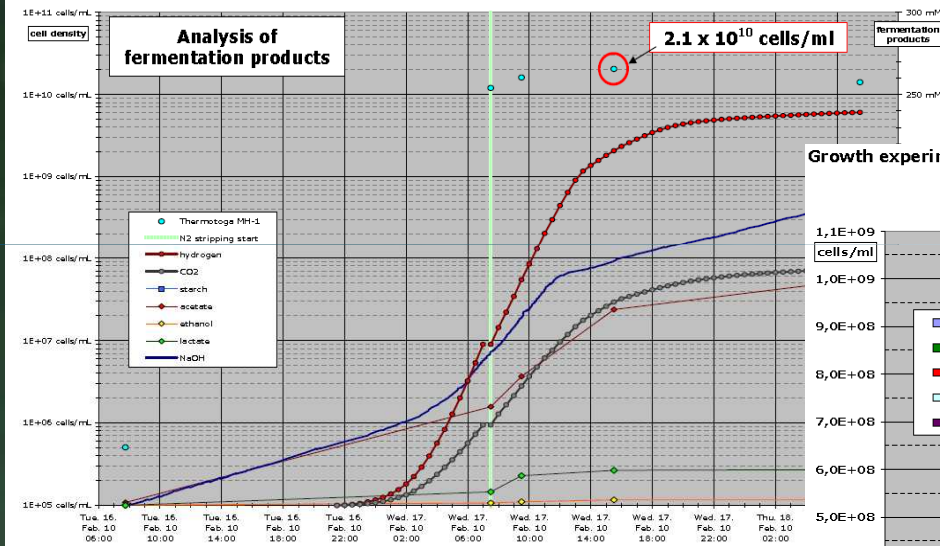
Biogas market Germany



Aquatic biomass potential? Even larger?

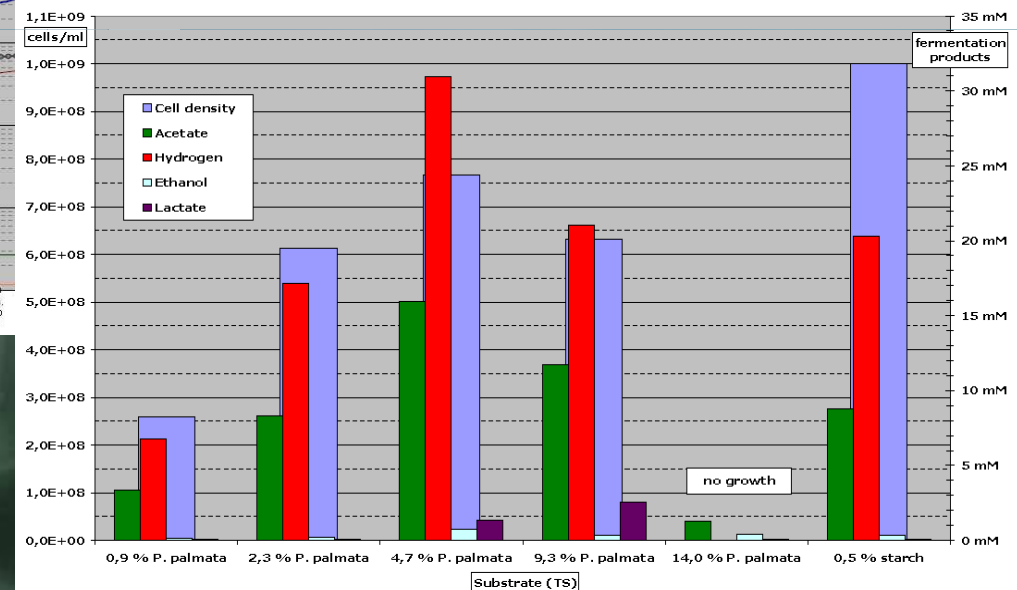
Growth experiment with T. MH-1 on 10 % (TS) algae residues (*S. latissima*) in a 100 liter bioreactor on February 15th

→ Can T. MH-1 grow on high concentrations of algae?



Growth experiment with T. MH-1 on *Palmaria palmata* in small scale (20 ml liquid culture) on February 3rd

→ Can T. MH-1 grow on red algae as substrate?



H.T
Hydrogen
4.97



CLIMATE CHANGING TECHNOLOGY

Regenics er et bioteknologiselskap som utvikler teknologi og produkter for sårheling og forbedring av hud

reGenics

Regenics R&D Wound Healing Cosmeceuticals Company Contact

Photo of Salmon Roe.

Pioner in the development of autologous cell-based therapeutics

November 2009: Regenics are looking to hire a new scientist/lab technician, preferably with administrative experience for project management. The full description of the position will be announced on [NAV in Norway](#).

November 2009: Regenics move lab and offices to the GE building at Storo in Oslo.

September 2009: Dr. Gammelsæter is made "EU Female Entrepreneurial Ambassador" by the European Commission and received the award from Crown Princess Victoria of Sweden on October 5th 2009.

June 2009: President of Regenics, Dr. Gammelsæter, is one of six finalists for Sylvania Brustads Womens Entrepreneur Award of 1 MNOK.

Regenics AS, is a Norwegian biotechnology company based in Oslo. The business concept is to develop and patent technologies and products for therapeutic wound healing and cosmeceutical applications.

Fra forskning til produkt

Grunnforskning gir ideer

Prof. Collas har vist at celler kan få tilbake stamcelleegenskaper og bli mer aktive

Ved å eksponere cellene til signalstoffer fra stamceller
Gjør cellene mer aktive

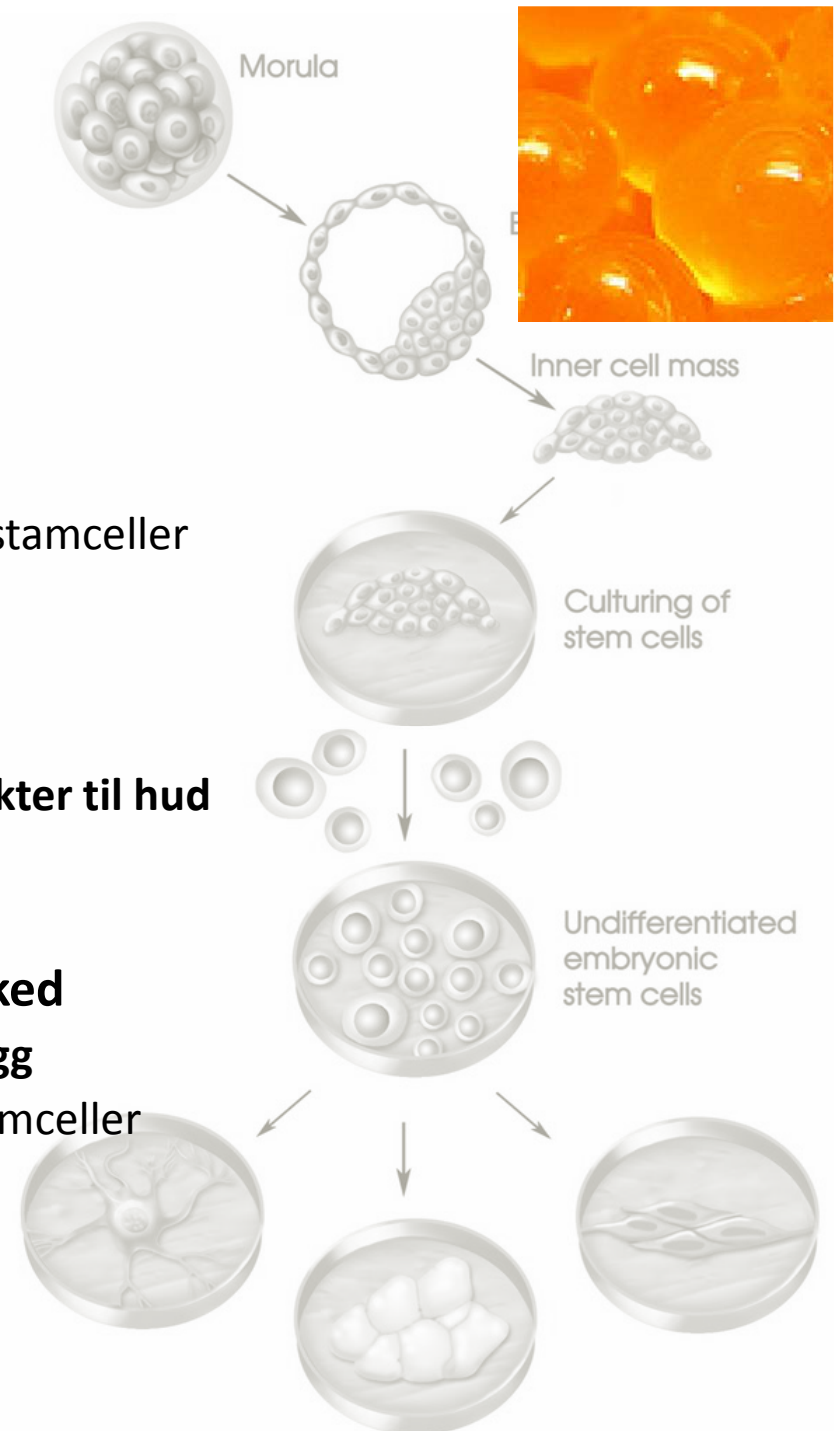
Bringe grunnforskning til produkt

Investorer så potensiale for å utvikle produkter til hud
Det finnes få produkter som heler sår

Næringsrettet forskning gir produkt til marked

Ideen var å utvinne ekstrakter fra marine egg

Egg inneholder samme signalstoffer som stamceller
Fiskeegg er en tilgjengelig råvare
Ufarlig og etisk akseptabelt



Regenics' produkter regenererer hud

Produktene gjør cellene i huden mer aktive

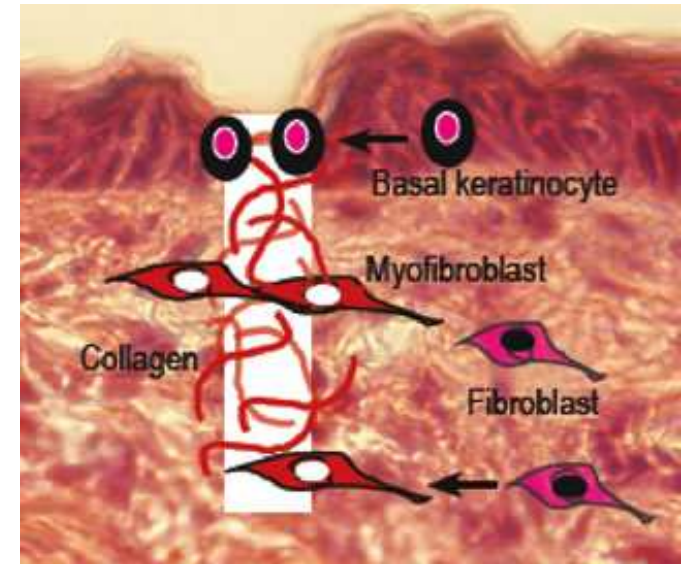
Kollagen er viktig for å hele sår

Skilles ut av fibroblaster og danner arrvevet

Kollagen er ettertraktet i det kosmetiske markedet

Tap av kollagen med alder gir rynker

Mens vi jobber med å videreutvikle det terapeutiske produktet med cellemekaniske effekter på sårheling lanserer vi et enklere produkt til bruk i kosmetikk.



Fremdrift i forskning, produktutvikling og finansiering

	Sårhelingsprodukt	Kosmetisk produkt	Intellectual Property Rights	Salg	Finansiering	Bedriftsutvikling
2006	Forskningsidé og businessidé <i>Proof-of-concept</i> vitenskapelige data		Patenterte i USA Publiserte i vitenskapelige tidsskrifter		Etablererstipend (1 år) og SkatteFUNN (3 år) Investorer inn med midler til 1 års forprosjekt	Etablerte AS Satte styre Ansatte 1 person
2007	Videre forskning sårhelingsprodukt	Fant sideprodukt med effekter på rynker og eldet hud	Patent i PCT		Eksisterende investorer	Ansatte 1 person
2008	Videre forskning sårhelingsprodukt	Samlet vitenskapelige data Rettet forskningen mot produkt	Patent i EPO		Eksisterende investorer Etablererstipend II (1 år) Forskningsrådet (3 år)	Ansatte 1 person
2009	Videre forskning sårhelingsprodukt	Utviklet produksjonsprosess	Patenterte i USA Patent i ulike land	Testsalg til liten kosmetisk aktør	Eksisterende investorer Konsulentstønad fra Næringsetaten Ny SkatteFUNN (3 år)	Ansatte 1 person
2010	Videre forskning sårhelingsprodukt Forventet på marked i 2013	Produserer kosmetisk produkt	Følge opp patenter Registrere nytt patent i USA	Jobber mot større kosmetiske aktører i USA	Eksisterende investorer Arbeider med en større IFU-søknad til IN Mulig større investorer	Ansetter 2 personer

The Proteome is a complex place!



Same Genome (DNA)...

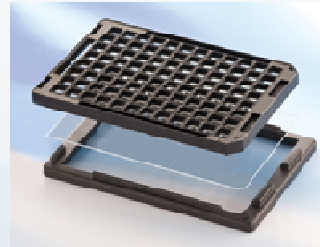


Very different
proteome!
(Proteins)

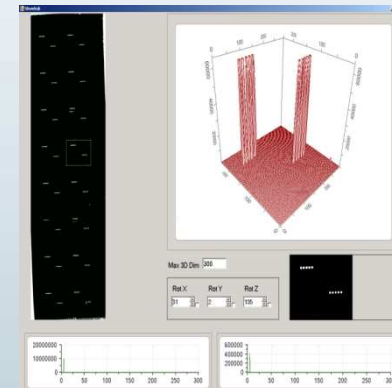
The Proteome Starts Here.
The Proteome Starts Here.

Gentel's APiX™ Array System

- 10-fold reduction in cost over fluorescence systems
- 3-20 fold increase in sensitivity
- Equal or better in other performance measures
- Familiar & easy-to-use 96 well format
- Proprietary, patented



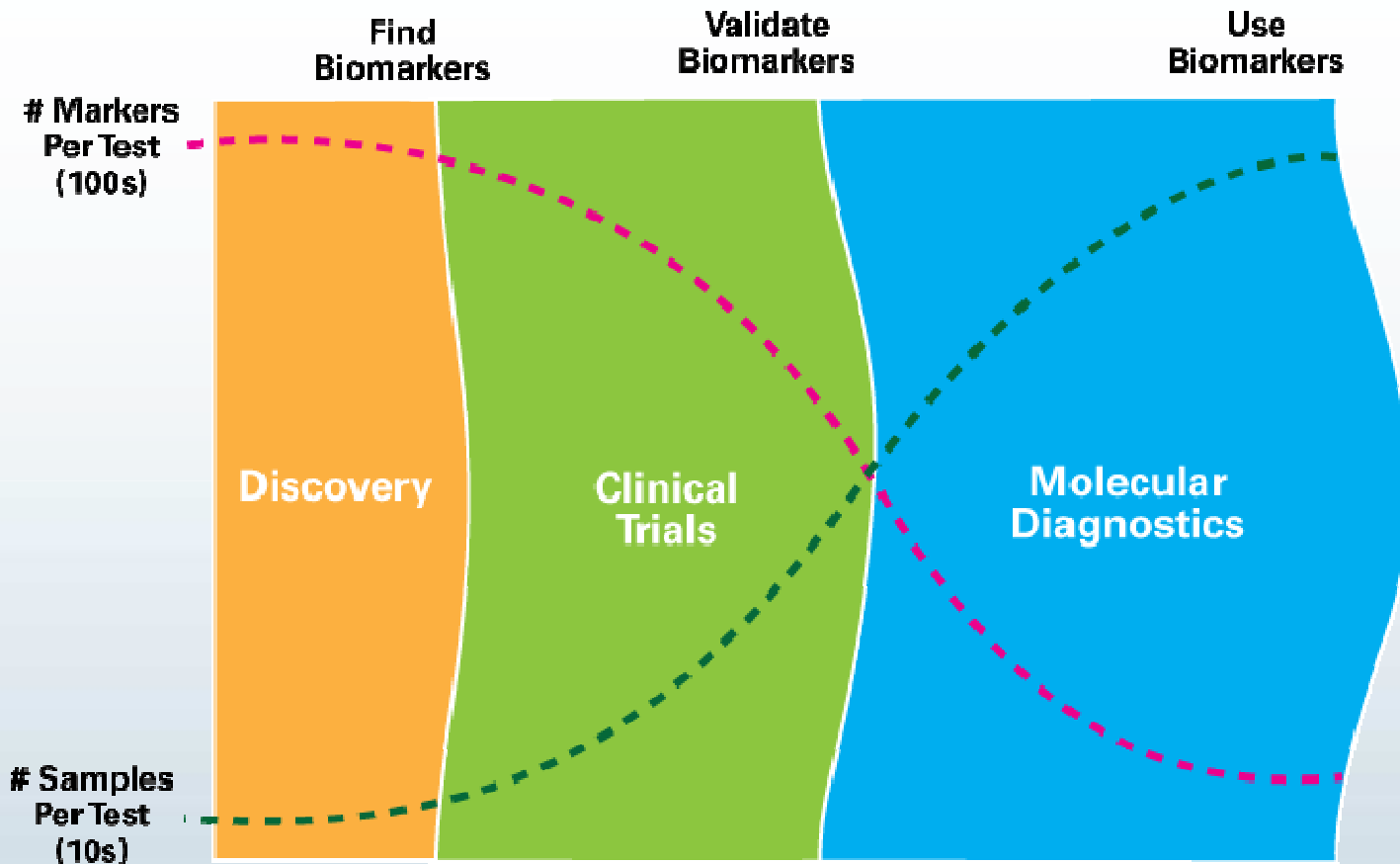
**Scanner &
Software: \$5K**



The Proteome Starts Here.

The Proteome Starts Here.

Protein Biomarker Utility



The Proteome Starts Here.
The Proteome Starts Here.

Source: Frost & Sullivan

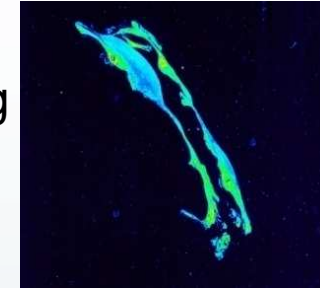
Complete Proteomics Workstation



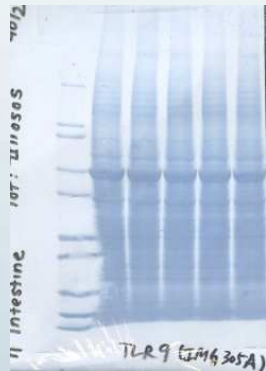
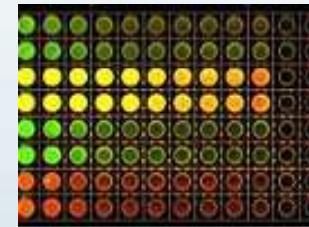
Protein Arrays

(Forward, Reverse, and Whole Proteome)

Tissue / Tissue Array Imaging

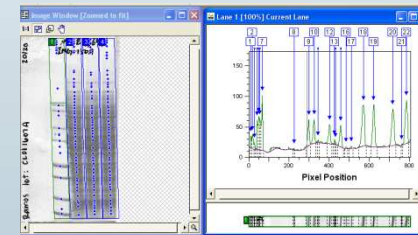


ELISA & in-cell Westerns



Western Blots

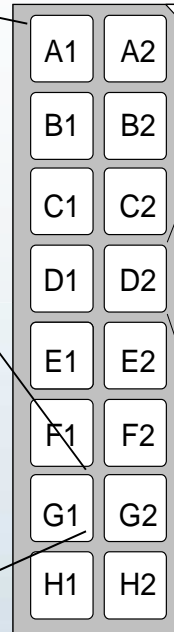
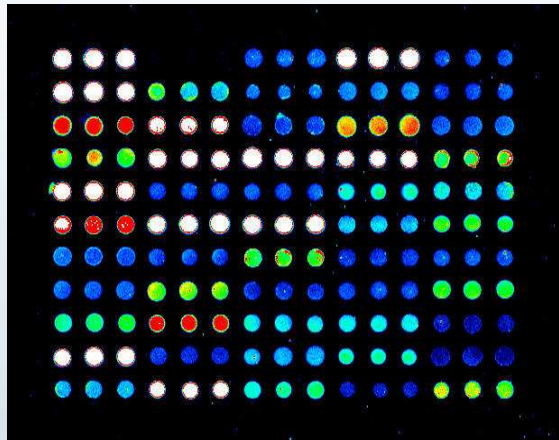
AthenaQuant™ Software
for arrays, ELISA,
westerns, in-cell
westerns



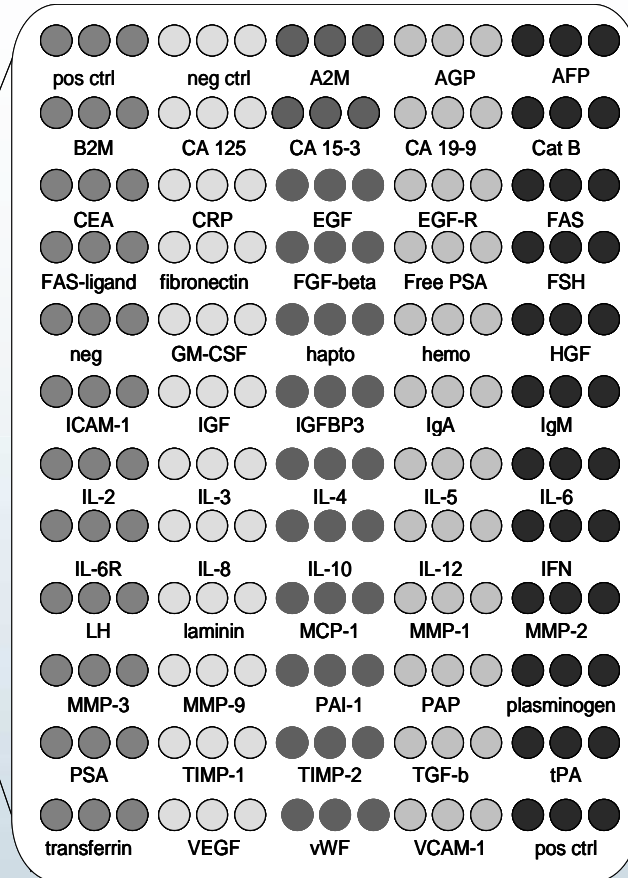
The Proteome Starts Here.



APiX™ Cancer Biomarker Array



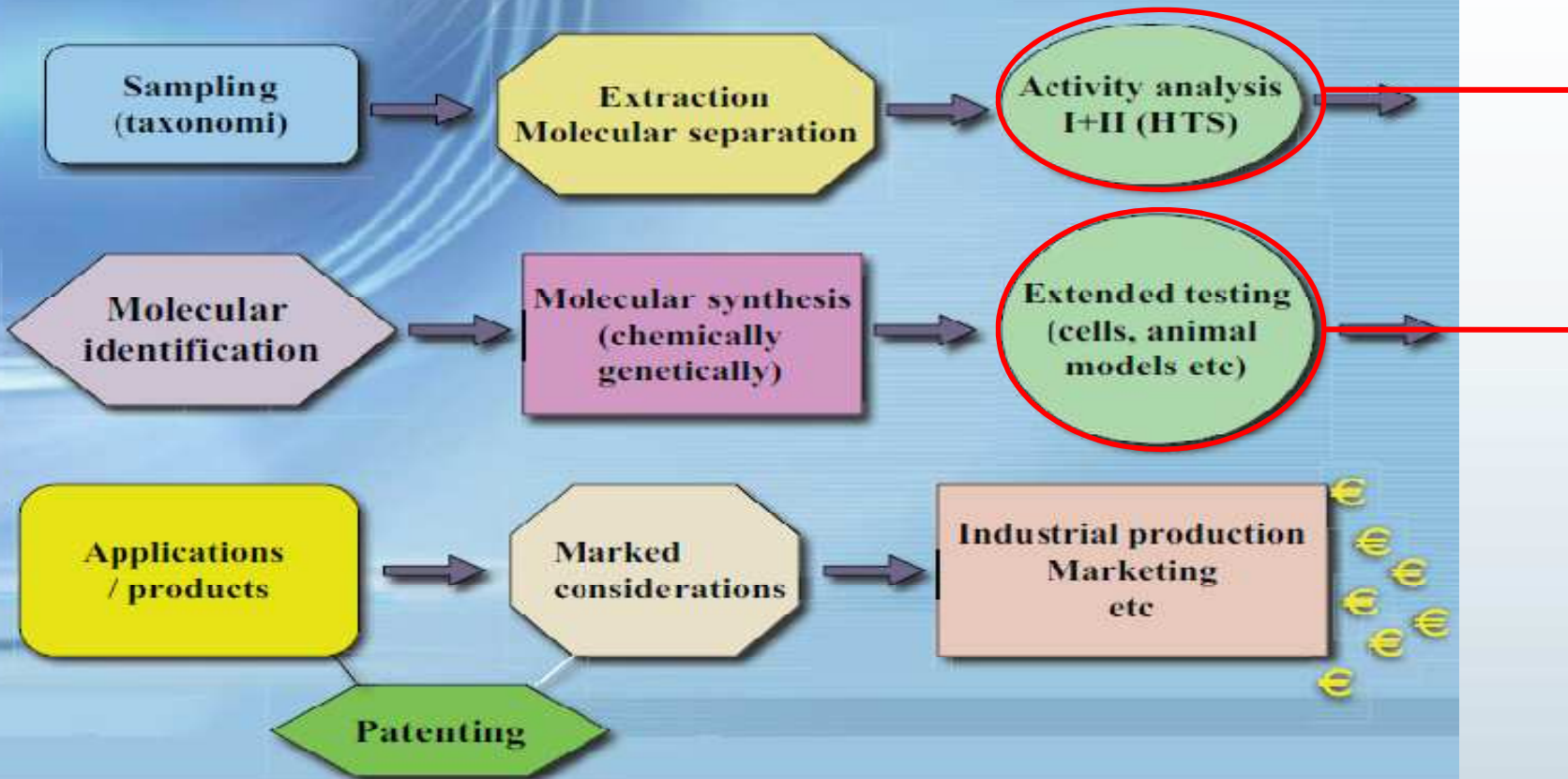
Protein Chip



The Proteome Starts Here.



Bioprospecting; a multi disciplinary value chain



The Proteome Starts Here.
The Proteome Starts Here.

The MabCent screening targets / activities:

Against tumor

Against bacteria

Against inflammations

Against virus

Anti-oxidants

cardiovascular effects

Against diabetes

Immuno stimulating

Enzymes and inhibitors



The Proteome Starts Here.
The Proteome Starts Here.

Life Science Nutrition



Marin bioprospecting

» **Antiviral nutroceuticals**



Innovation for life