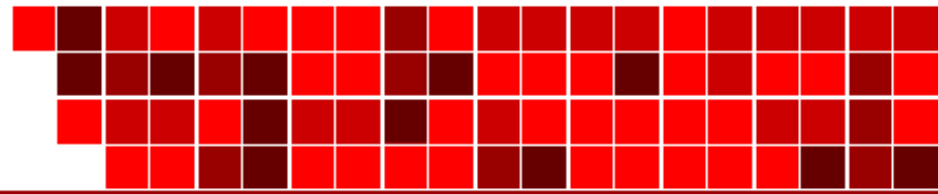


Cytokines and Biomarkers

Protein Production & Analytical Services



SBH Sciences



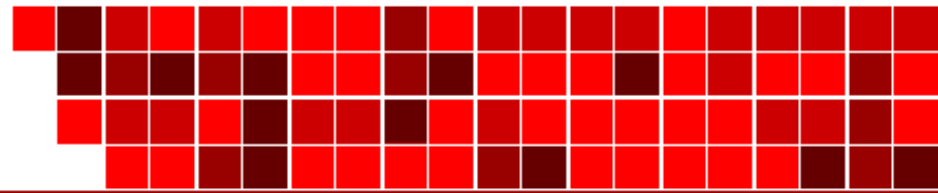
Accelerate your drug discovery & development

We provide:

Cytokines & Biomarkers Services

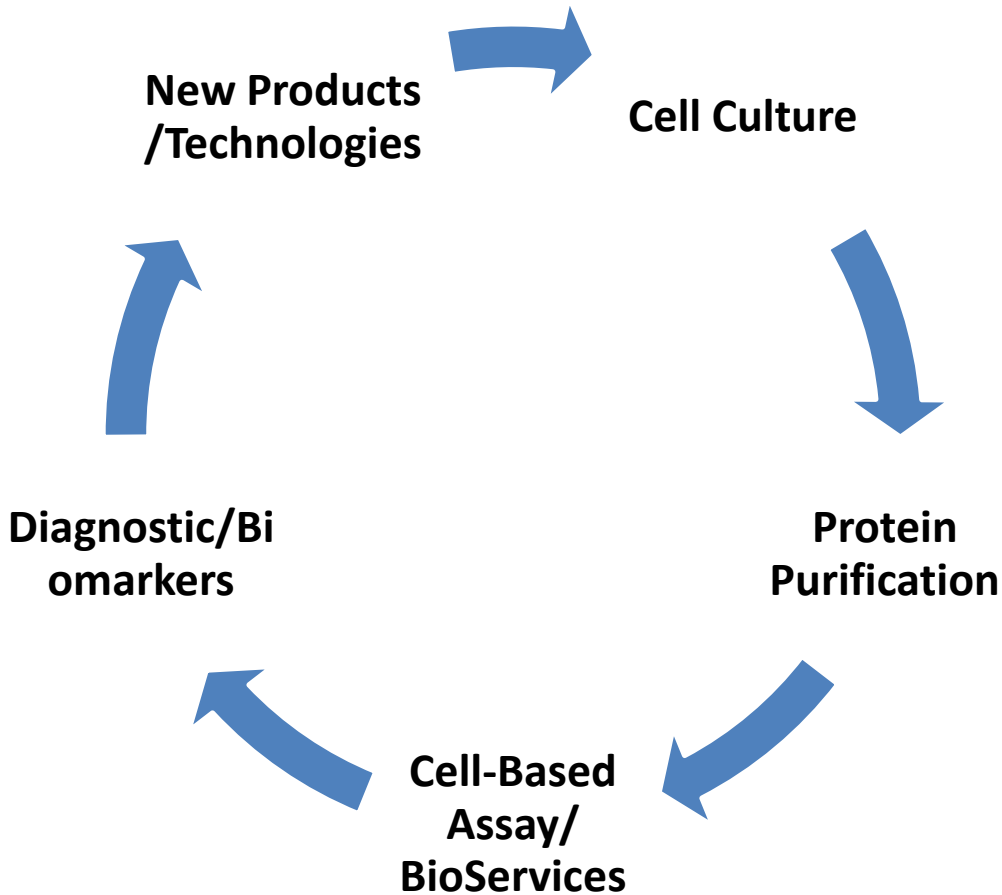
Research Excellence and Innovations

On-Time Delivery



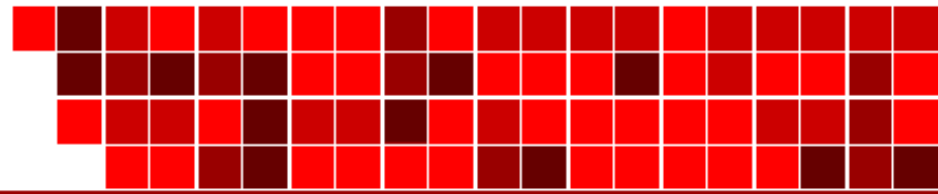
SBH Sciences

Discovery and Pre-clinical Development



- Cell culture expertise
- Cytokines research
- Potency assays
- Toxicity profiling
- Production optimization
- Purification process
- Methods development

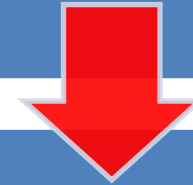




We Partner with Customers to Create a Competitive Advantage by Delivering Precise and Reliable Services

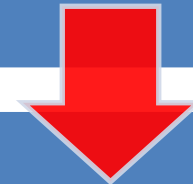
Project Initiation

- Consultation ▶ Budgeting ▶ Design



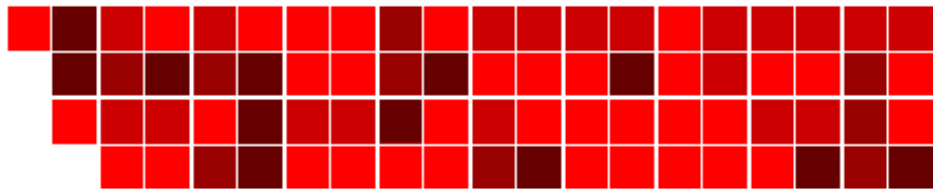
Execution

- Initiation ▶ Updates ▶ Amendments



Report

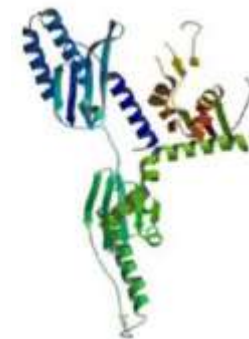
- Draft ▶ Discussion ▶ Final Report



Company Highlights

Cytokines Research and Production

- World's most comprehensive cytokine research services (including cytokines, anti-cytokines & peptides screening)
- > 250 cell-based cytokines potency assays
- 27 cytokine-producing systems developed and commercialized



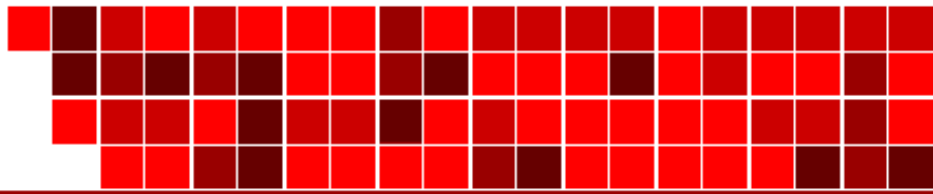
Drug Profiling

- Potency and toxicity cell-based assays with rapid turn-around

Cell Culture/Purification Expertise

- DNA to final pure products
- Nine human primary cells and >100 mammalian cell lines for routine investigations

Serving > 60 companies worldwide for over 12 years

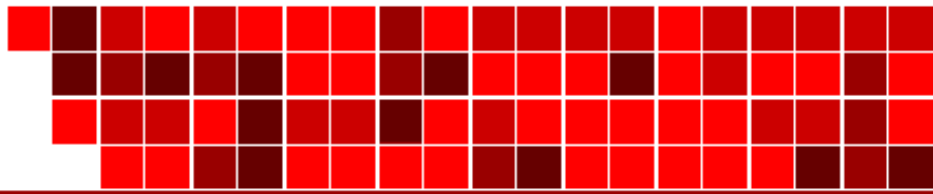


SBH Sciences has Produced and Commercialized Over 60 Cytokines and Other Biologics

27 Recombinant proteins and 35 monoclonal antibodies

TGF-Beta/ Activin (TGF-b1, Activin-A, GDF-15)	Interleukins (IL-12, IL-23)	Growth Factors (HGF)
Interferon (IFN-b)	Adipokines	Bone Morphogenic Proteins (BMP-7)
Soluble receptors (s-IL-6R)	IGF-BPs (IGF-BP-6)	Lubricin
Enzymes (Granzyme B)	CD22	TNF Receptor (HVEM-Fc)
Anti-interleukin	Anti-TNFa	Anti-VEGF

All products are > 95% pure, tag-free, and carrier-protein free



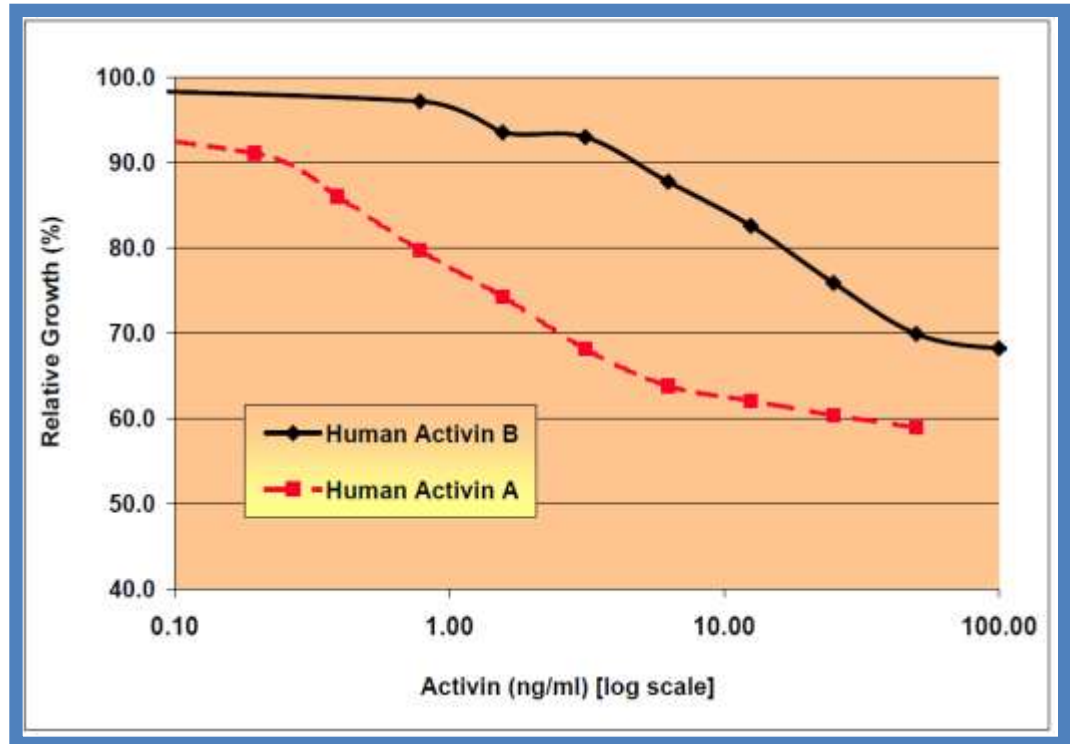
Cell-Based Potency Assay – Case Study

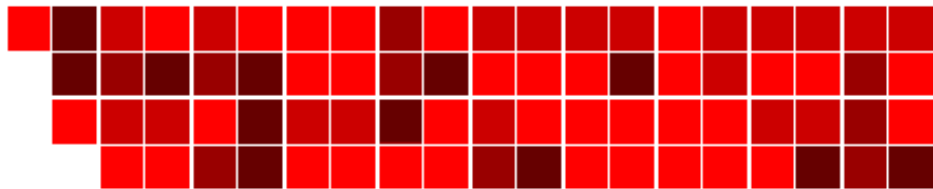
In-vitro test for h-Activin A and h-Activin B using MPC-11 cells

SBH Sciences received an urgent request for a method to measure the biological activity of human Activin A and Activin B

Screening of our cell-lines library, assay was developed using the MPC-11 cells with a sensitivity range at 1 to 10 ng/mL

This assay also measures myostatin and pre-myostatin

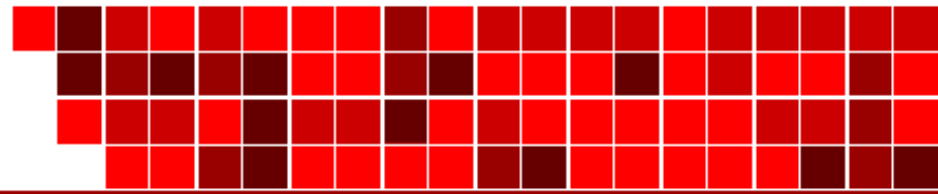




Pre-clinical Product Development - Case Study: human IL-12

- Proprietary human IL-12 production process was developed
- COA established for commercial release to the R&D market
- Neumedicines, Inc. (CA) licensed the technology from SBH Sciences
- In 2008, both companies collaborated to secure a Biomedical Advanced Research and Development Authority (BARDA) contract to develop IL-12 for Acute Radiation Syndrome
- In 2009, SBH Sciences optimized the process, scale-up, and transferred the technology to a GMP manufacturing

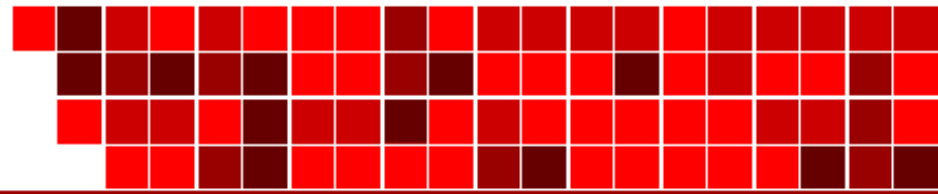




Cell Culture Production Services

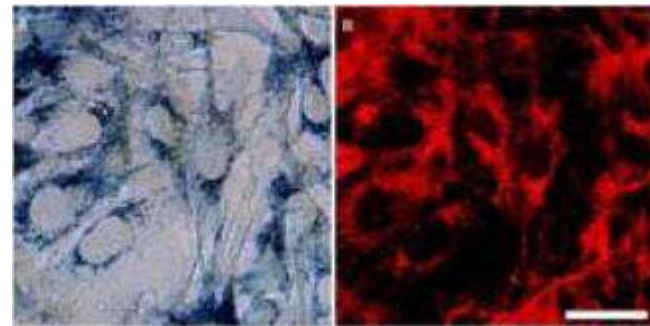
- Mammalian & insect cells over-expressing protein of interest
- Production of monoclonal antibodies
- Vaccine production
- Optimization of growth conditions (including cell culture media optimization and serum-free adaptation)
- Production of cell pellets

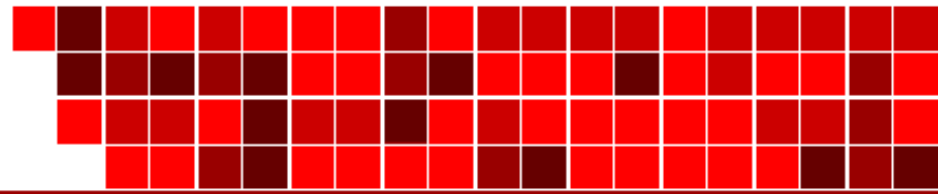
Let our expertise be your competitive edge!



Cell Culture Specialty Services

- Supply any mammalian cell lines before and after cytokines stimulation
- Cell banking services (including freezing solution & stability studies)
- Caco-2 permeability assay services
(collaboration with pION)
- Customized services

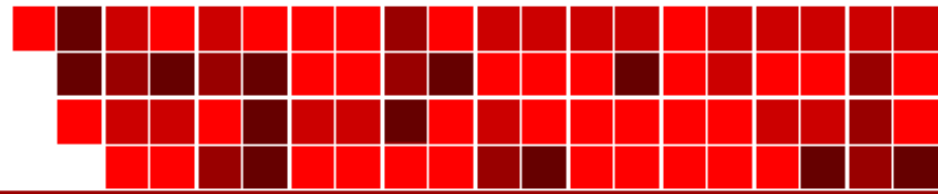




Cell-based Potency and Safety Profiling

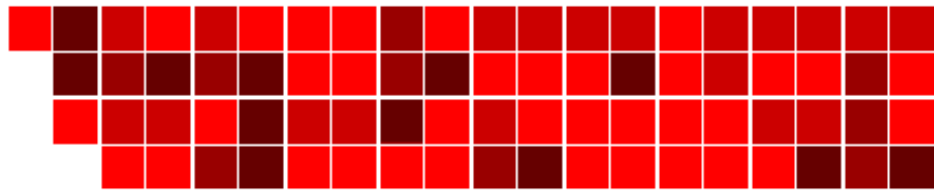
- Oncology
- Inflammation
- Metabolic diseases (Diabetes)
- Neurobiology (Neurodegeneration/Neuroprotection)
- Dermatology and connective diseases
- Bone and cartilage

Cell-based assays are cost-effective and time-saving tools for the screening of leading drug candidates



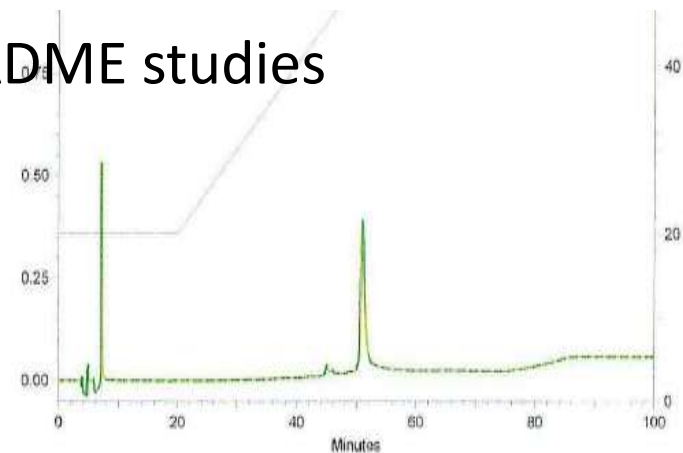
Early Drug Discovery

- **Drug Discovery Services**
 - Lead optimization (measure potency & toxicity)
 - Develop cell-based disease models
 - Biomarkers discovery & profiling
- **Manufacturing of Cytokines and Biologics**
 - Cell culture processes development
 - Optimize proteins purification
 - Scale-up manufacturing

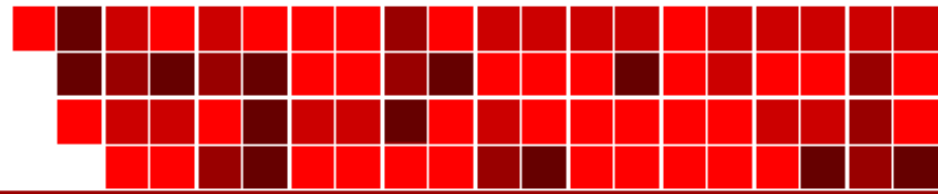


Pre-clinical Analytical Services

- Development of Certificate of Analysis
 - Quantitative methods
 - HPLC
 - ELISA – RBA – Western
- Multiplex – multi-array analysis
- Protein formulations & stability studies
- Quantitative methods for early PK/ADME studies
- Evaluation of drug modifications
 - Specific PEGylation
 - Glycosylation



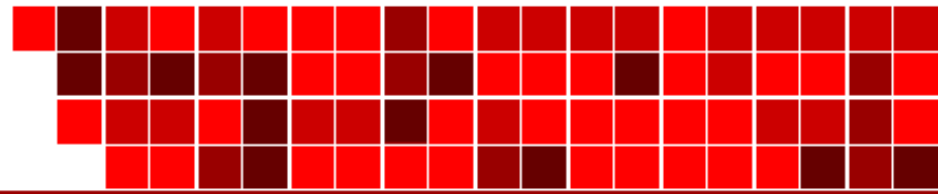
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Protein Purification Services

- Initial separations / recovery (TFF).
- Resin selection – Resin optimization strategy.
- Development of scalable, well understood and reproducible purification process.
- LC capability (Ion Exchange, HIC, Affinity, Metal, HA, SEC).
- HPLC (Preparative & Analytical)

**Our commercial products are > 95% pure
All are tag-free and carrier-protein free**



Let us be your preferred provider!

Raphael Nir, Ph.D.

Tel: 508-650-6218 Ext. 214

E-mail: rnir@sbhsciences.com

www.sbhsciences.com

Thank You !!!