

soft materials innovation

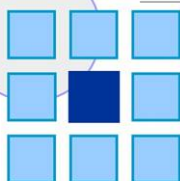
Academic Training for a Productive Workforce

*a not-so early phase company
perspective*



Fifth Annual ACSESS Forum
Computational Science Curriculum Development
Monday March 3rd 2008
john.newsam@fqubed.com

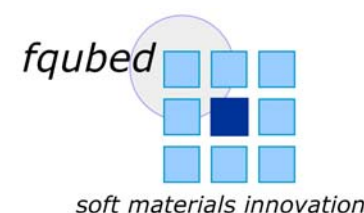
fqubed



soft materials innovation

fqubed: Corporate History

- Jan '98: F.Schüth & team and Pharmacopeia-MSI(Accelrys) planning
- Mar '99: hte Aktiengesellschaft founded
- Apr '00: hte North America subsidiary
- May '01: Planning for 'FFF' effort
- Jul '02: fqubed founded
- Jul '05: Completed year 3 operations
- Dec '05: Acquired by Nuvo Research Inc.



CONFIDENTIAL

DEPARTMENT OF MOTOR VEHICLES
REGISTRATION OPERATIONS DIVISION
P.O. BOX 942869
SACRAMENTO, CA 94269-0001

INFO



April 5, 2005

John M. Newsam
4303 Corte Al Fresco
San Diego, CA. 92130

LIC: FQUBED

Dear Mr. John M. Newsam:

Your request for the purchase of the environmental license plate described above has been received in our office and reviewed.

Unfortunately, we are unable to approve the requested license plate configuration for the following reason(s):

1. California Vehicle Code, Section 5105(a), states, we must refuse any license plate configuration which carries connotations offensive to good taste and decency, or which may be misleading to some of our citizens.

A charge back in the amount of \$41.00 will be applied to your credit card account. Please allow up to 60 days for the credit to show up on your statement.

Thank you for your interest in the California Environmental License Plate Program. If you have any questions, please call (916) 657-7654.

Sincerely,

K. Puiia, Manager
Special Processing Unit

TE:SB



NUVO

Nuvo is becoming a global leader in the research & development of drug products for delivery to or through the skin

State of the Art R&D Capabilities

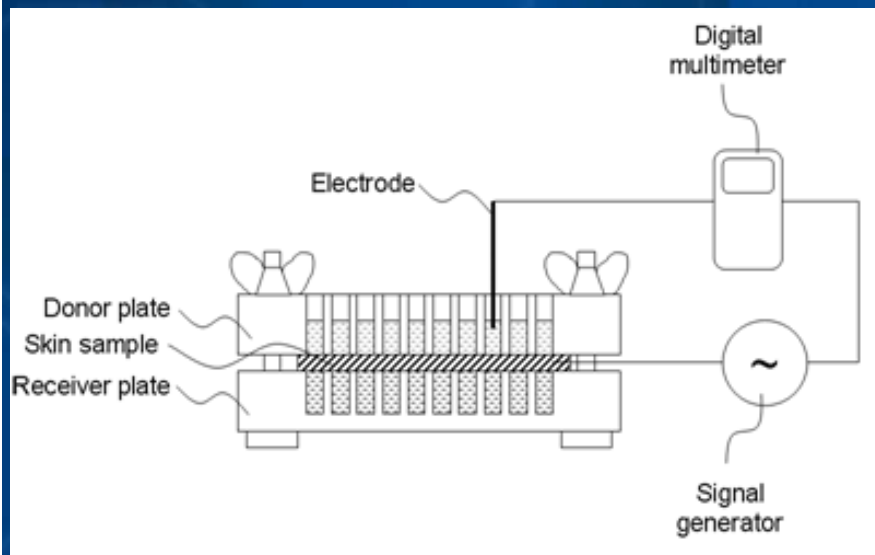


- Disciplined new product planning process
- Unique skin permeabilization & permeation screening platforms
- Proven formulation development strengths

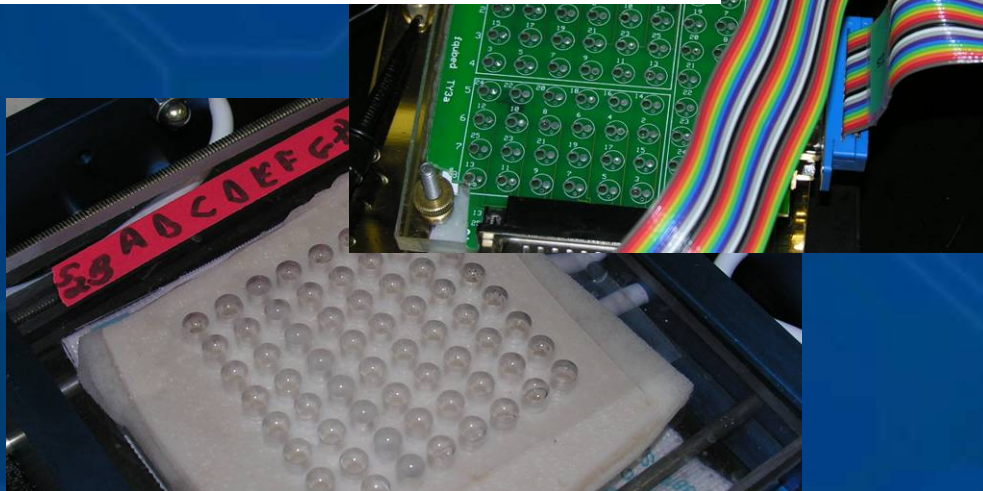


INSIGHT™

Screening Permeabilization



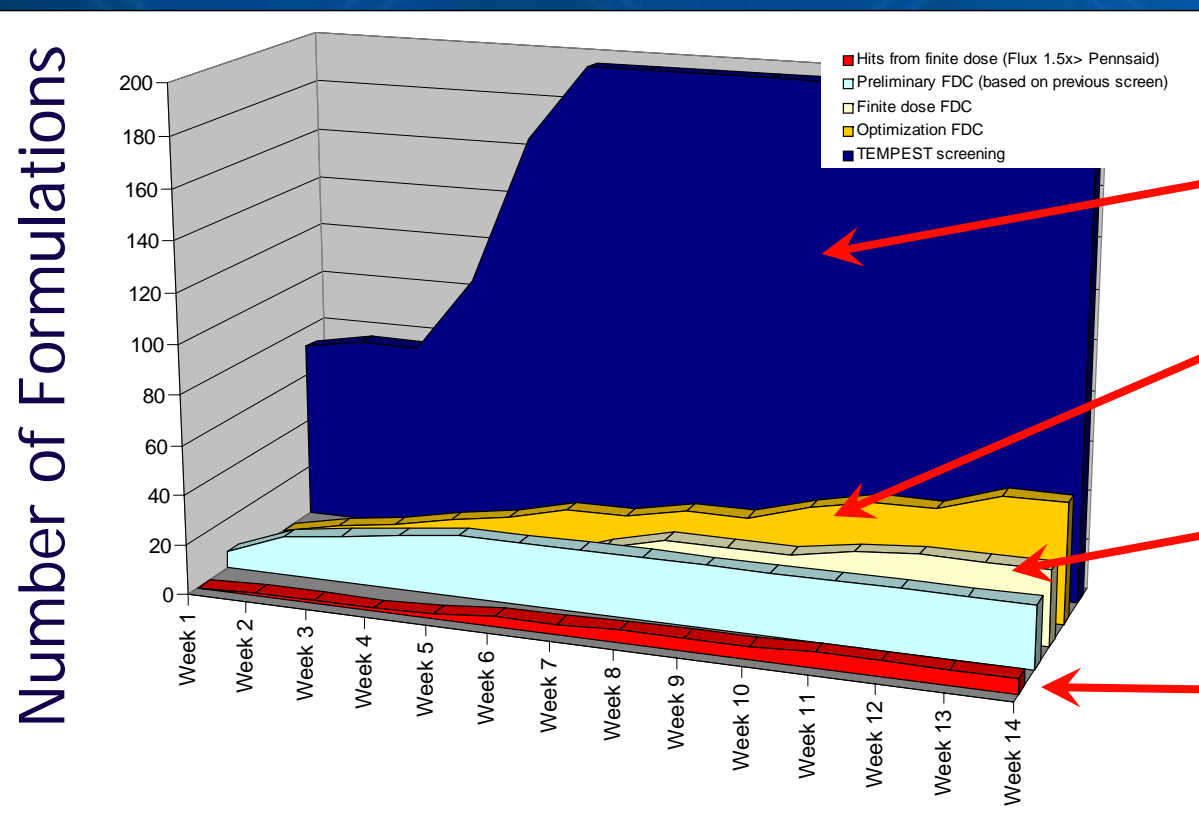
- Original concept from UC Santa Barbara (S.Mitragotri)
- Impedance change as proxy of skin barrier permeabilization
- >3,000 measurements day⁻¹ [conventional ~30]



(INSIGHT™ = IN vitro Skin Impedance Guided High Throughput Screening)



NRI-1005 Formulations Screening



TEMPEST™ runs

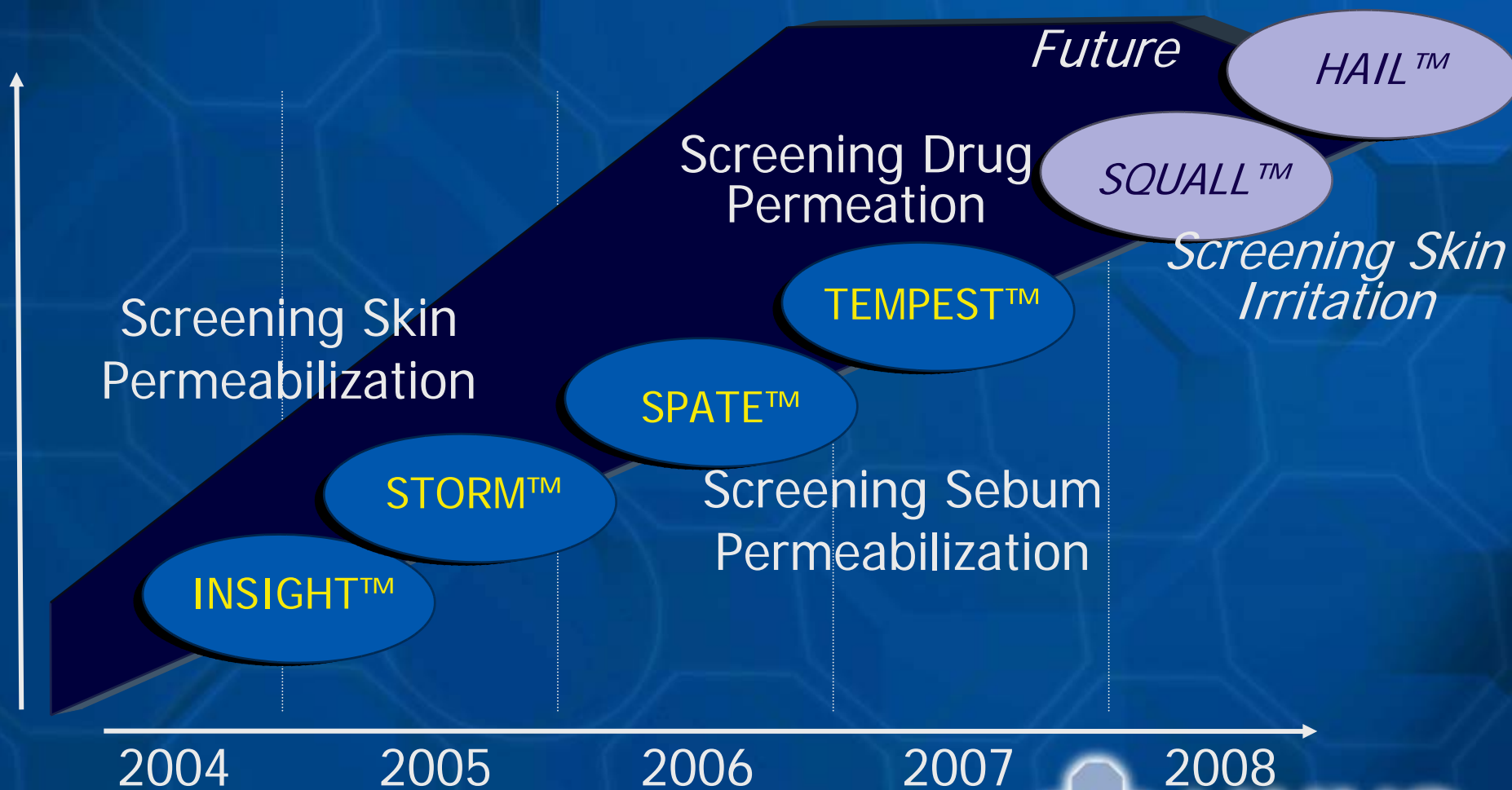
Optimization FDC

Finite dose FDC

"Hits" [1.5x over Pennsaid®]



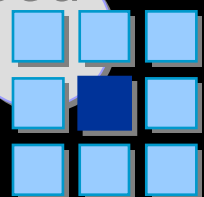
HTE screening platform development



(SQUALL™ = Spectroscopy-based Quantitative Assaying of irritation Levels)

(HAIL™ = High throughput Assaying of Irritation Levels)

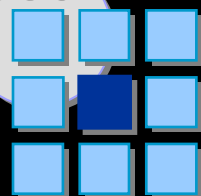




Curriculum development: arm's-length thoughts

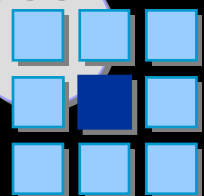
Candidate ranking based on sense that she/he will:

- Fill an immediate & specific need
- Get the job done
 - Fluency with tools
 - Motivation & project completion drive
- Fit in
 - Inter-personal and manageability skills
- Bring a state-of-the-art viewpoint
 - Conversancy with own field
- Develop innovative solutions
 - Original research contributions



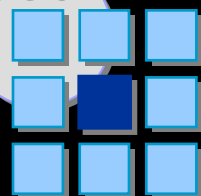
"Like to include in curriculum design"

- Pharmacokinetics study, cheminformatics study
- Proteomics, genomics research concepts and techniques
- Some courses useful for computational biologist/ bioinformatics
 - Applied Statistics and Biostatistics
 - Bioinformatics-centric data structures and algorithms
 - Data mining and management in bioinformatics
 - Molecular modeling and drug discovery
 - Analytical and computational neuroscience
 - Microarray data exploration and analysis
 - Modeling and simulation in computational biology
 - Image processing and analysis
 - Pattern recognition and application
- Some level of industrial experience



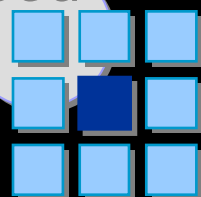
Dimensions that resonate (personal)

- Meets minimum requirements
- Expertise of direct relevance
- Proven people skills
- Outstanding academic achievement
 - GPA; published / presented work(s); [award]
- Ability to innovate
- Industrial experience
- Introduction from acquaintance
- Extra-curricular achievement or interest
- Drive to project completion



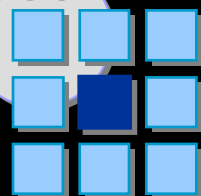
Perspective: Early Phase Company

- D.Phil.
- Post doc, Japan (2 yrs)
- Exxon Research & Engineering Co. (8 yrs)
- Biosym Technologies, Inc./ MSI (10 yrs)
- hte, fqubed (NextGen Venture Fund)



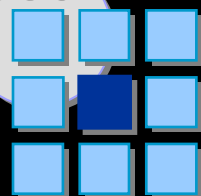
Questions posed of a job seeker

- What is difficult in thinking about job(s)/position(s) to apply for?
Direct relevance of curriculum
- What most surprised you about interning in industry?
Collaboration need, communication, need to learn new technologies, working to deadline, sense of humor
- What personal skills did you found useful (or lacking)?
Specific academic skills/knowledge
- How do you see computational science strengths valued?
Today 3-4 out of 5; 5 years hence nearer 5



Productive employee skills

- Good team player
- Communication skill or client-interface/design talent
- Interest to learn new technology
- Proactive
- Energetic, self motivator and ability to work independently
- Approachable and friendly
- Strong analytical and problem solving skills
- Experience in troubleshooting



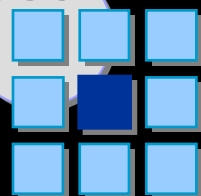
fqubed hiring projections

March 6 2003 (launch + 8 months):

- fqubed is at fledgling phase
- Hiring predicated on funding, projects
- Predisposed toward existing 'short list' of candidates/contacts
- Current expectations:
 - VP Business Development, VP Science and Technology, then R&D (including computational)

March 2 2006 (launch + 44 months):

- Continue to engage contractors, interns
- Continue to recruit through contact network
- Immediate expectations:
 - PhD's: Soft materials engineer, Skin biologist
 - MSc's: Analytical chemist, Tissue biologist



fqubed hiring projections

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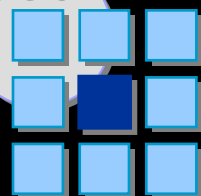
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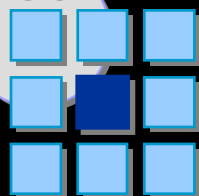
March 2 2008 (launch + 68 months):

- Gearing for growth, predicated on Pennsaid® approval
- Informatics scientist; admin; experimentalists (PhD, MSc)



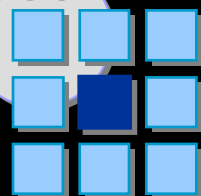
Some MS & PhD Expectations

Some Expectations	MS	PhD
	Proven technical skills	Frontline knowledge of own field
	Ability to pursue given direction	Ability to research a science field
	Motivation & ability to develop new skills	Presentation skills, confidence, motivation, aspirations
	Work ethic	Capacity for novel contributions
Some ??'s		Pursuit of problem to closure
		Breadth in perspectives ??
Some ??'s		Degree of comfort with risk ??



Some preparation thoughts

- Outstanding achievement
- Industry experience
- Sense of direction(s) or step(s)
- Contacts, connections, networking
- Thinking/planning ahead (but....)



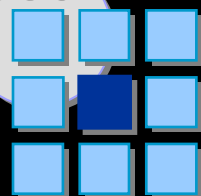
Internships with us

Opportunities:

- No recurring formal program
- Occasionally 3 mos over summer
- 'by hour' on case by case
- Usually have potential projects, not always \$
 - particularly marketing, business development

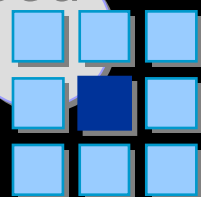
Usual expectation:

- Ability to work independently



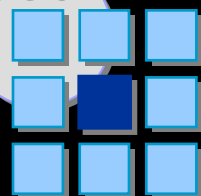
Large Company – Small Company

Large Company	Small Company
(Hire into program)	Hire into position
Often career management	Typically unstructured
Insulated from overall business	Sensitive to immediate company performance
Limited business exposure	Engaged in many business aspects
Certain stability, longevity plan	Higher-risk, maybe higher potential reward



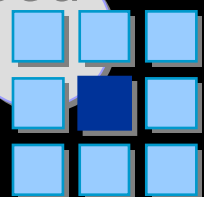
Finding a position

- Post doc or not ? (PhD or not?)
 - Directly relevant to position
 - Broader perspectives
 - Clarity on own preferred directions
 - Personally-desired experience (geography, culture, group, ..)
- Large company - small company
- Locating possibilities
- Plan a campaign
- Developing a predisposition towards consideration



My Own Career Path

- B.A. (Chemistry)
 - ⇒ Post-graduate work or gainful employment
- D.Phil (Chemistry)
 - ⇒ Inexplicable wish to live in Japan
- Fellowship in Japan (Physics)
 - ⇒ Decision to come to US
 - ⇒ Academia or Industry
- Staff Scientist at Exxon Corporate Research
 - ⇒ Head-hunting approach
 - ⇒ Working in the 'comfort zone'
- Move to Biosym technologies (San Diego):
 - ⇒ Change in external & internal circumstances
 - ⇒ Motivation in 'making technology useful'
- hte Aktiengesellschaft
 - ⇒ Change in external & internal circumstances
 - ⇒ Motivated for a 'ground zero' company launch
- fqubed, Inc. / Nuvo Research Inc.

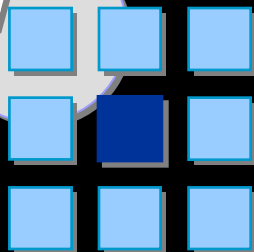


Dimensions found important personally

- Balance
- Key aspects of a job/position
 - ⇒ It pays the bills
 - ⇒ It engenders passion
 - ⇒ It has a strong scientific dimension
 - ⇒ It leverages past investments
 - ⇒ It stretches in new ways
- Personal interactions
 - ⇒ Working with people you feel good about working with
 - ⇒ Value of contact network
- Opportunity to have impact



fqubed



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Thank You

www.nuvoresearch.com

www.fqubed.com

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