

Development of Permanent but Removable Tattoos



Bruce Klitzman, PhD

Kenan Plastic Surgery Research Labs,
and Departments of Biomedical Engineering
and Cell Biology

Duke University Medical Center
Durham, NC 27710 USA

June 6-7, 2013





Robert Lefkowitz of Duke University wins Nobel Prize



USA Basketball wins second gold medal in a row under the leadership of Coach Mike Krzyzewski of Duke University

False Title

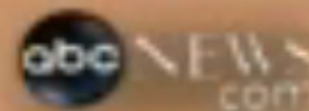
- **ALL tattoos can be removed; the question is how aggressive/invasive to be, how long it will take, and how much it will cost.**
 - If need be, surgical excision can physically remove all tattooed tissue

<http://abcnews.go.com/GMA/Parenting/tattoos-teens-parents-teens-body-art/story?id=11849086>

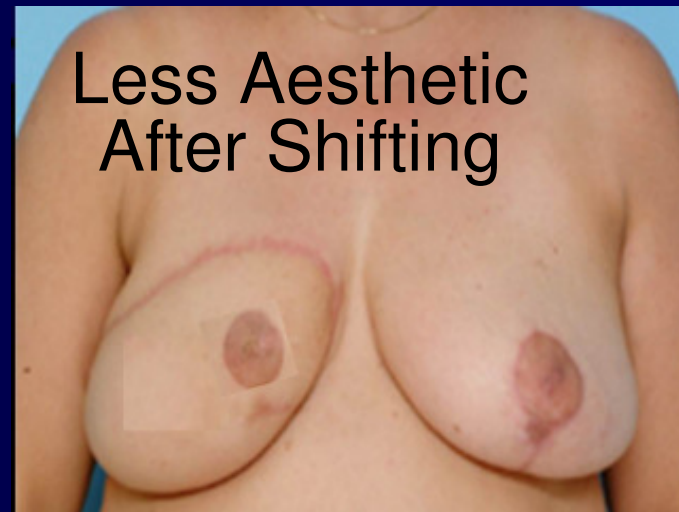
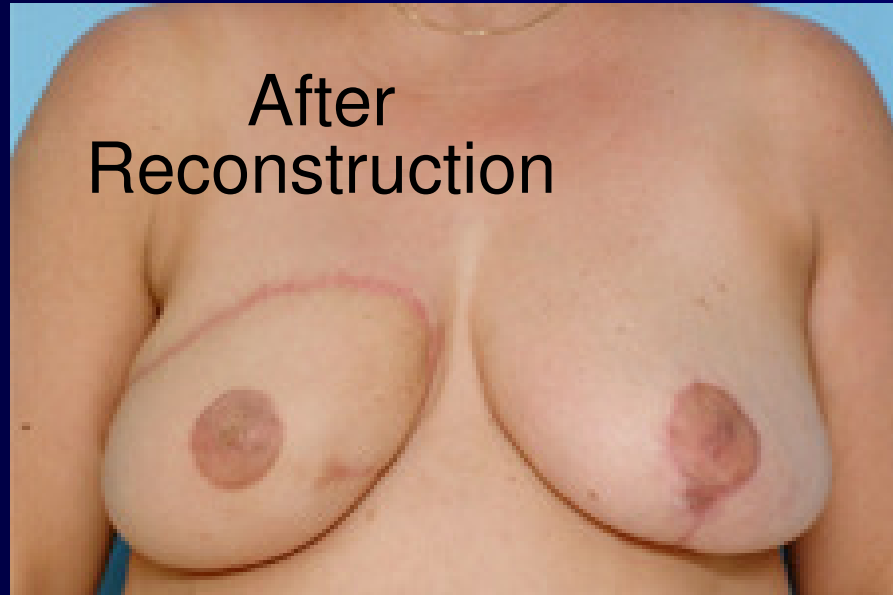
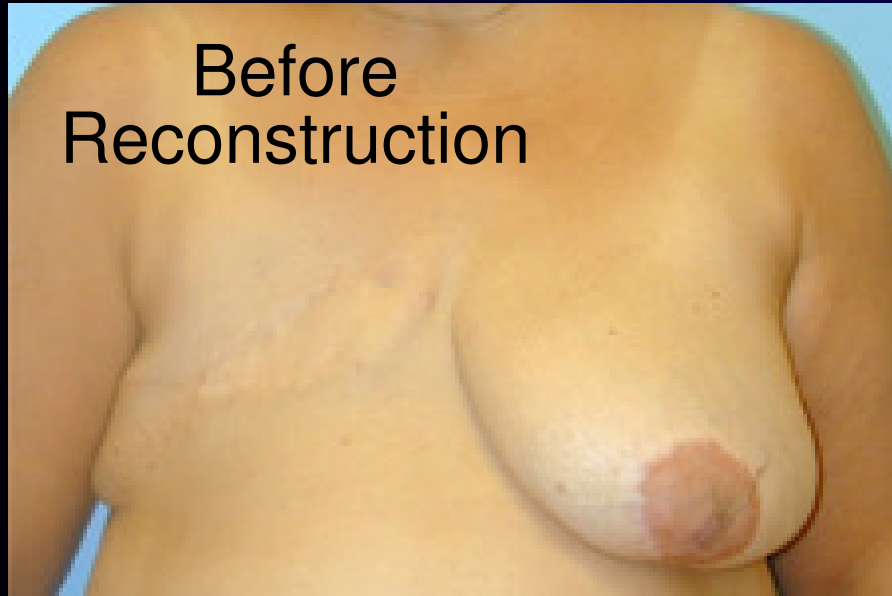
40% of 18-29 ^{Year} ^{Olds}

I Have Tattoos

Source: 2010 PEW Research Study



The medical need to change tattoo initiated my interest

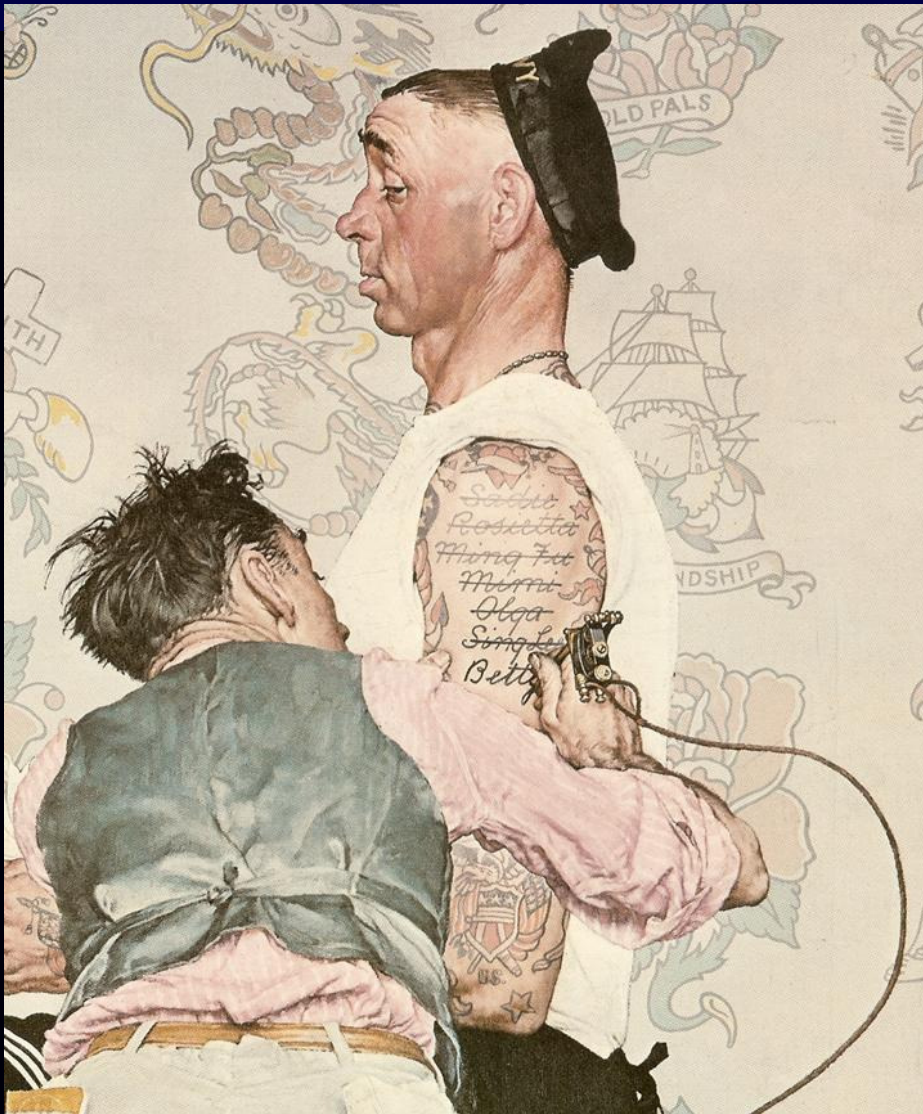


This is a real need, but is a very small market.

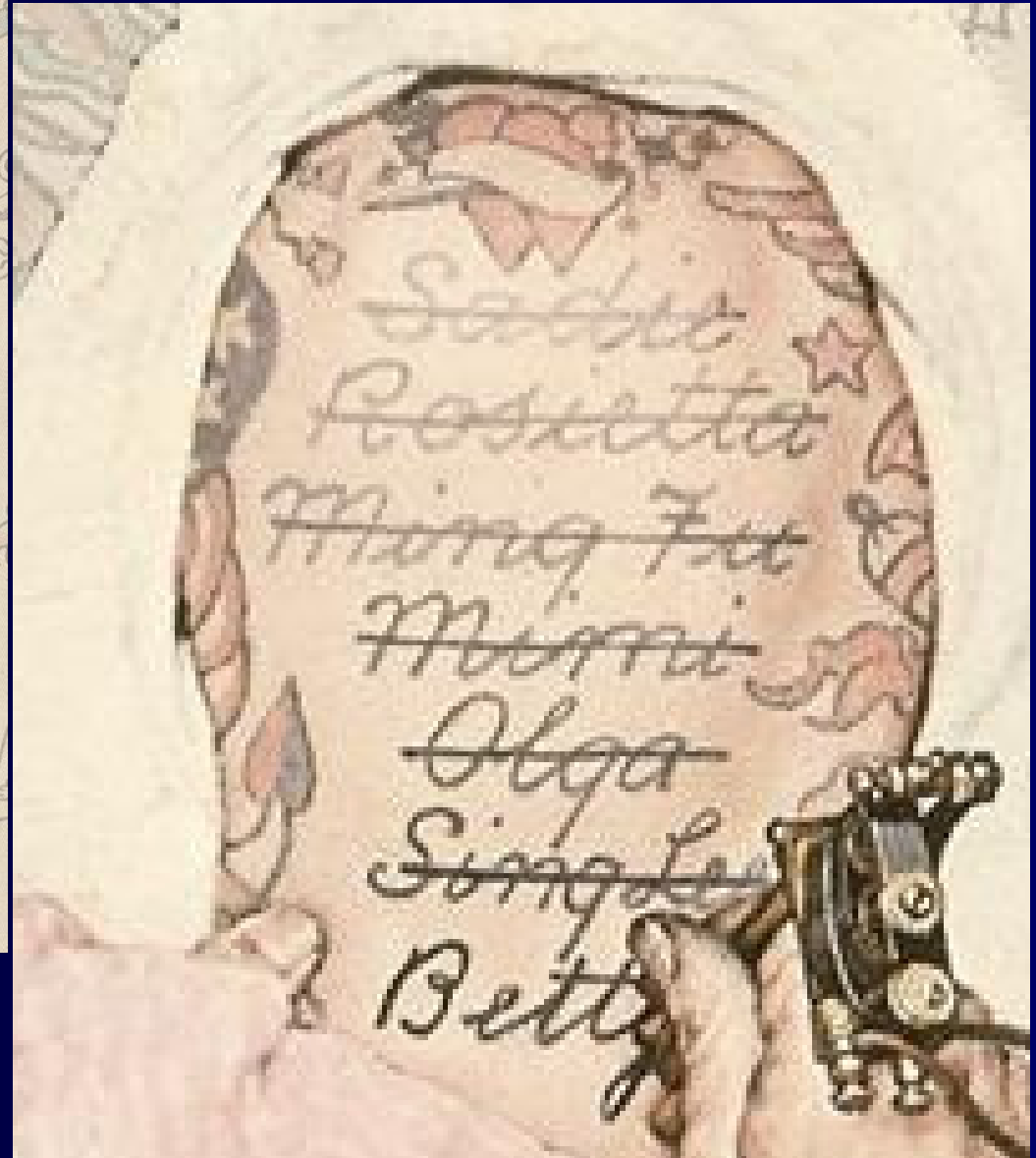
Is tattoo alteration needed?

50% of all tattoo clients eventually have regret about their tattoos. However, only 4% pursue medical or surgical removal due to very high cost and potential for scarring with current techniques. Lasers are not effective at removal.

**R. R. Anderson, M.D., Dermatologist, Harvard School of Medicine*



Norman Rockwell
"The Tattooist"



Some want change because of a bad decision in tattoo design



What was he thinking?



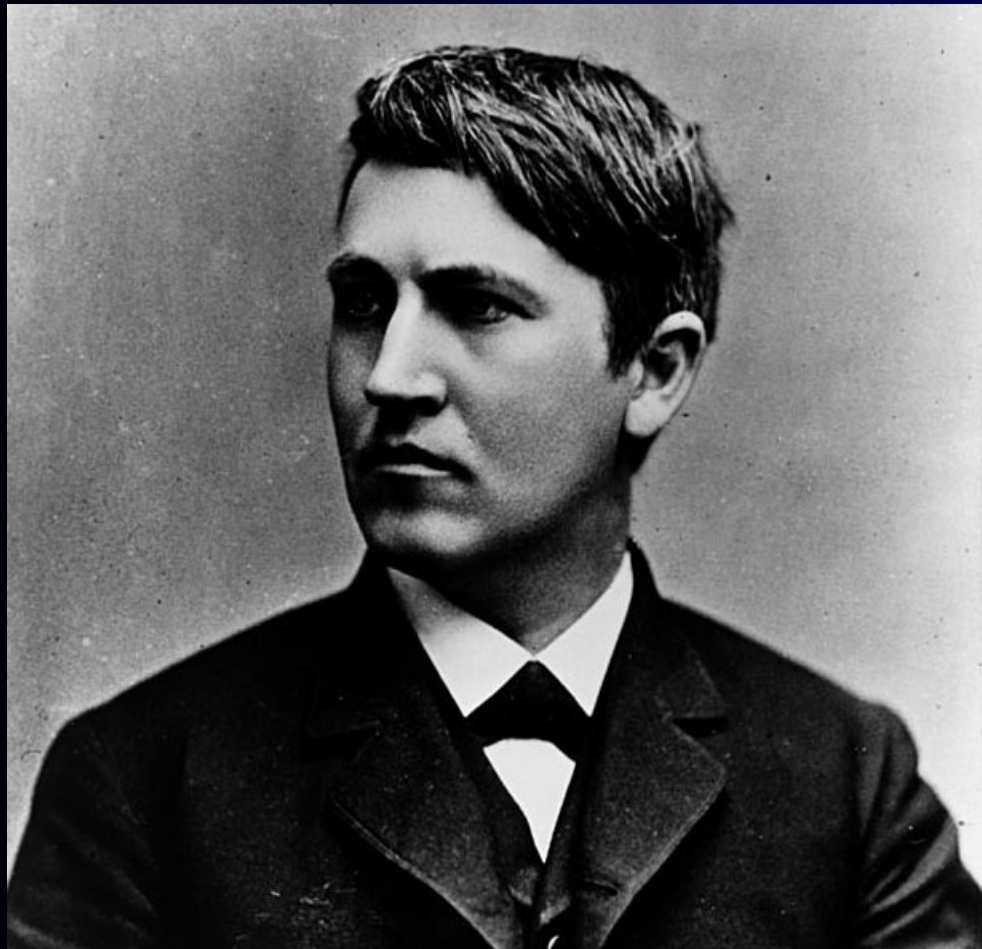
Others want change because of a bad decision in tattoo artist



Others want change because of a bad decision in tattoo artist

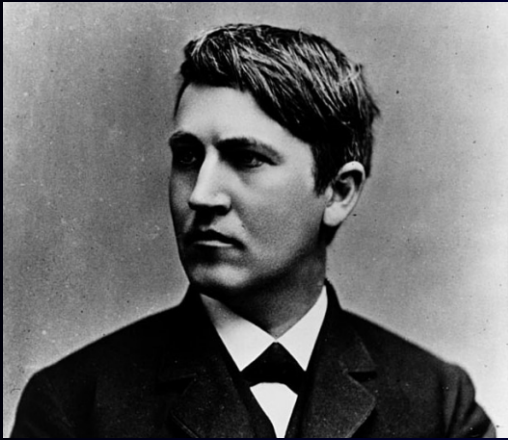


Technology and Tattooing



**Patent, 1877:
Motorized
Reciprocating
Ink Needle for
Paper Marking**

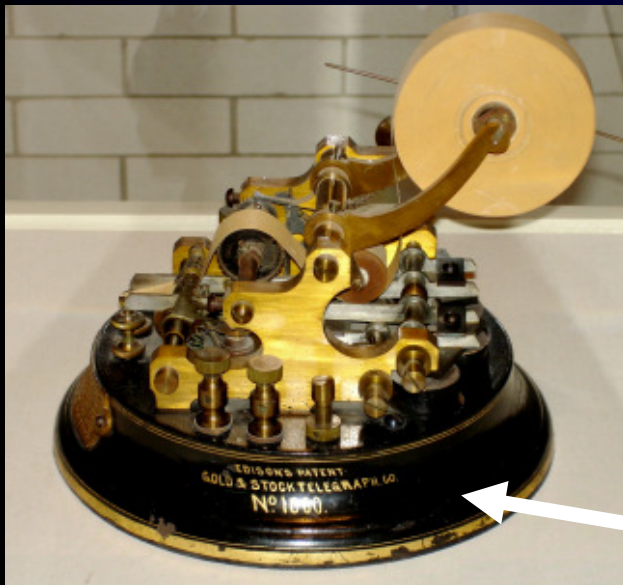
Patent, 1877: Motorized Reciprocating Ink Needle for Paper Marking



Thomas Alva Edison

Why paper marking?

Edison wanted a practical electric stock price printer to rival the telegraph: “ticker-tape”



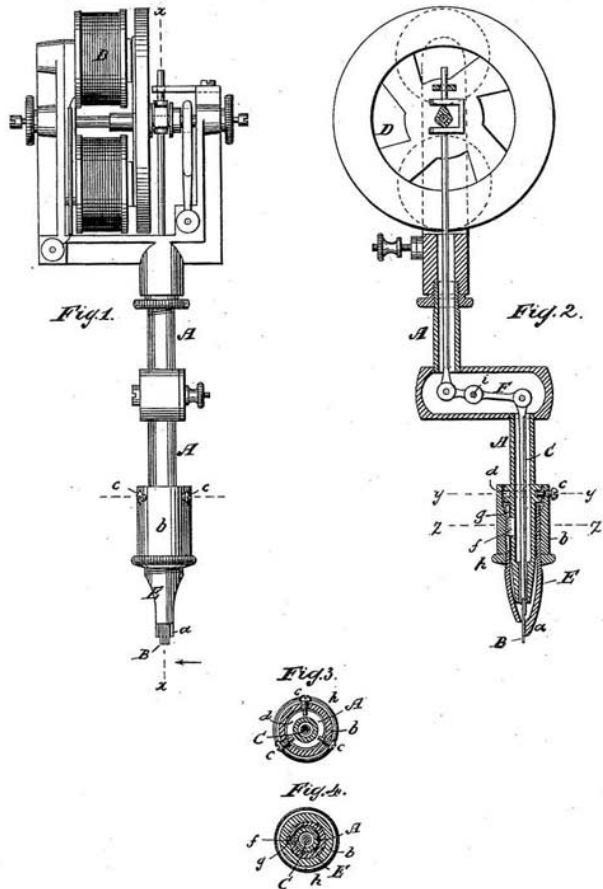
Samuel O'Reilly Patented a Tattooing Machine, 1891

(No Model.)

S. F. O'REILLY,
TATTOOING MACHINE,

No. 464,801.

Patented Dec. 8, 1891.



WITNESSES:

Edward Wolff,
William Wilson

INVENTOR:

Samuel F. O'Reilly,

BY

Van Santvoord & Hauck,
ATTORNEYS

UNITED STATES PATENT OFFICE.

SAMUEL F. O'REILLY, OF NEW YORK, N. Y.

TATTOOING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 464,801, dated December 8, 1891.

Application filed July 16, 1891. Serial No. 399,731. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL F. O'REILLY, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Tattooing-Machines, of which the following is a specification.

My invention relates to a tattooing-machine, the peculiar and novel construction of which is pointed out in the following specification and claims, and illustrated in the accompanying drawings, in which—

Figure 1 represents a front elevation. Fig. 2 is a longitudinal section in the plane $x x$, Fig. 1. Fig. 3 is a transverse section in the plane $y y$, Fig. 2. Fig. 4 is a similar section in the plane $z z$, Fig. 2.

In the drawings, the letter A designates the handle of my tattooing-machine, said handle 20 being made hollow, so that it is adapted to form the guide for the perforating-instrument B.

In the example shown in the drawings this instrument is composed of five needles; but it may consist only of a single needle, or the number of needles which constitute the perforating-instrument may be changed to suit 25 circumstances. The perforating-instrument

perforating-instrument pass into the skin. 50
For the purpose of adjusting the gage a , I use a tube b , which is provided with an internal screw-thread and which swivels freely round on the handle A, being held in place by screws c , which engage a circular groove d in the 55 handle. The tube b engages an external screw-thread on the ink-reservoir E, and this ink-reservoir is prevented from turning round on the handle by a feather-key f , which engages a groove or slot g in the ink-reservoir. 60
By turning the tube b the ink-reservoir E is moved in or out and the gage a can be adjusted in the required position. A thumbnut h serves to lock the tube b in the required position. The rod C is geared with 65 the electromotor by means of a lever F, which has its fulcrum on a stud i , so as to produce a comparatively large stroke of the perforating-instrument.

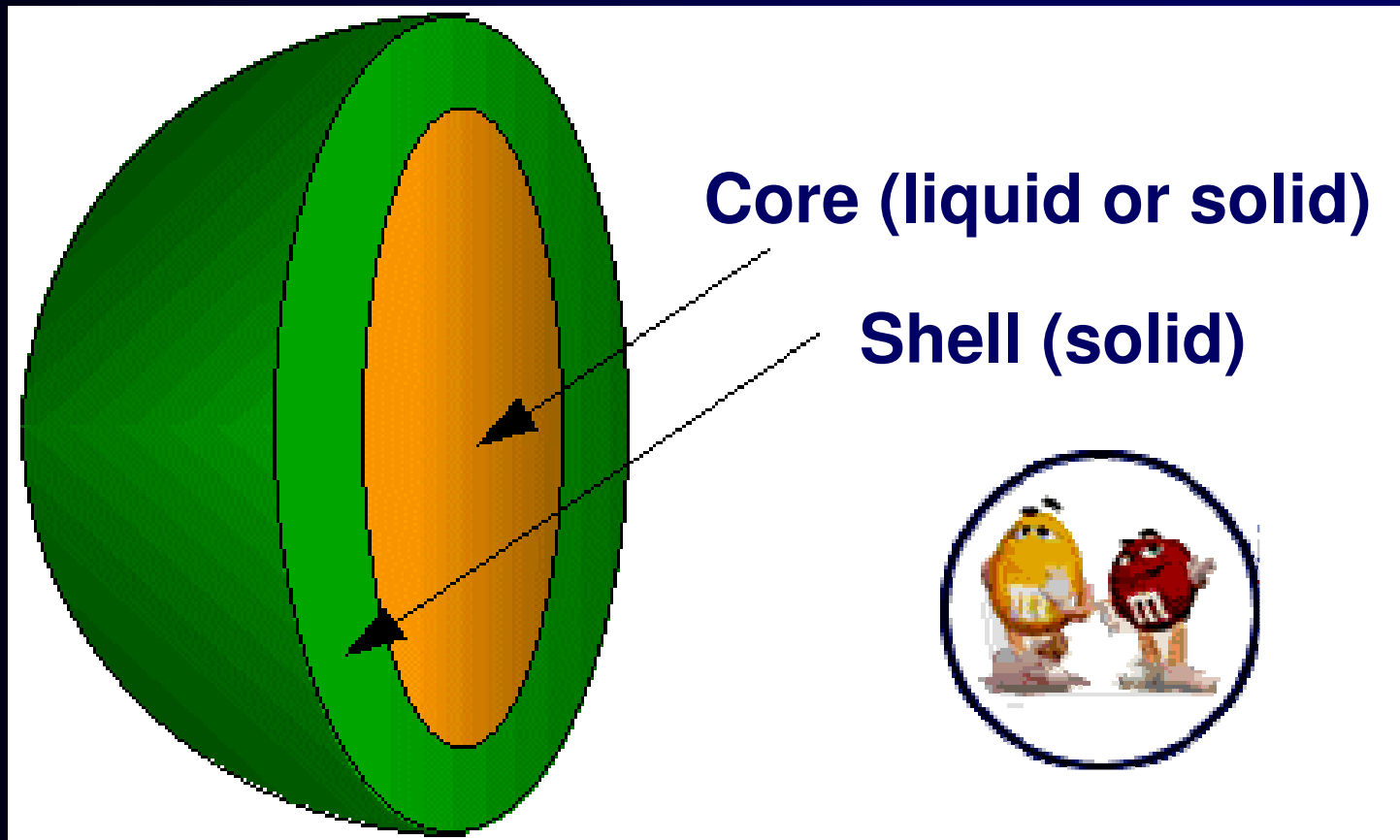
What I claim as new, and desire to secure 70 by Letters Patent, is—

1. The combination, with a tubular handle, of a tubular ink-reservoir movable along the lower end of the handle and provided with a gage, means for moving the ink-reservoir on 75 the handle to adjust the gage, and a perforating-instrument reciprocating through the

Our Innovation

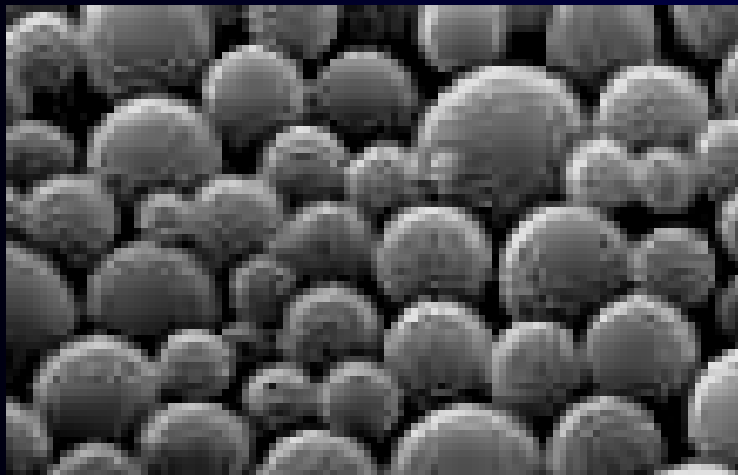
- removability of the markings could be easier if ink was made to be erasable from the beginning (“pencil vs pen”), instead of better lasers
- Key Idea: using a pigment that is rapidly cleared “reverses” the challenge: how do we stabilize a short-term ink?
- use of microencapsulation

Microencapsulation Applied to Removability



Microencapsulation: How it Works

Intact Microcapsules



Microcapsules After Rupture



United States Patent 6,013,122 *Klitzman* , et al. January 11, 2000

TATTOO INKS

Abstract

Tattoo inks are composed of pigments or dyes combined with a tattoo pigment vehicle which entraps, encases, incorporates, complexes, encapsulates, or is otherwise associated with the pigment to form pigment/vehicle complexes that retain the pigment in the tissue. The vehicle can be chosen so that pigments which alone are unsuitable for tattooing can be used for tattooing and optionally can be retained in the tissue permanently. Alternatively, the vehicle renders the tattoo erasable, wherein the tattoo disappears after imposition of an exogenous energy. Alternatively, the tattoo pigment vehicle renders the tattoo semi-permanent, so that the tattoo spontaneously disappears at a predetermined time.

Inventors: **Klitzman; Bruce** (Durham, NC); **Koger; Kim Edward** (Tequesta, FL)

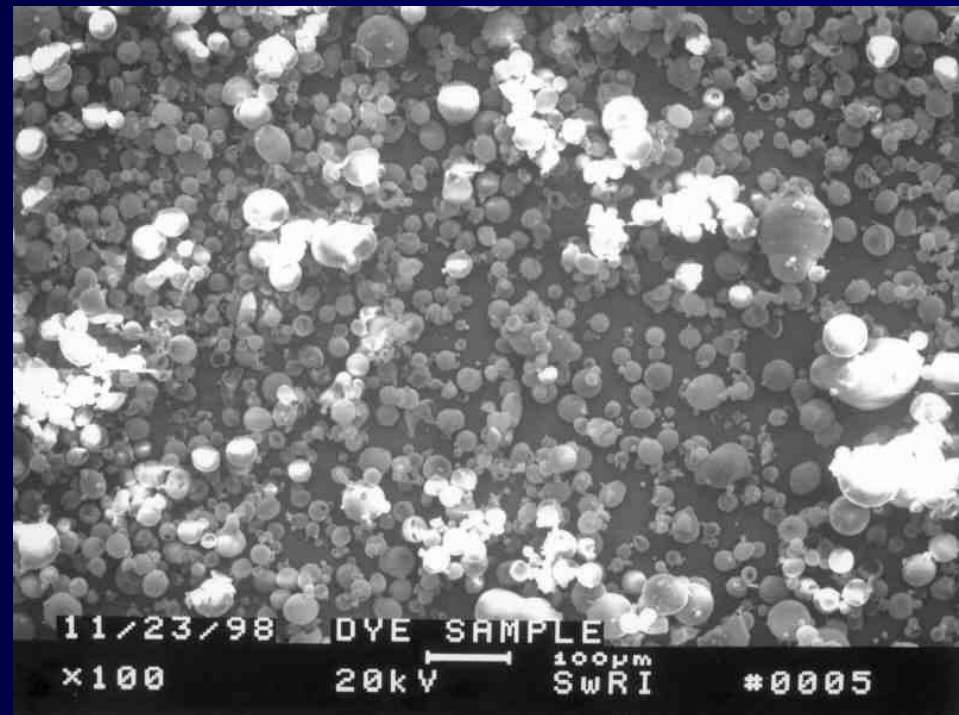
Assignee: **Option Technologies, Inc.** (Durham, NC)

Appl. No.: **135814**

Filed: **August 18, 1998**

Technical Development

- First attempt; water soluble dye encapsulated in wax in my kitchen
- Then, prototypes made of pigment microencapsulated in poly-olefin; cost (\$25K)



In Vivo Clearance Studies in Hairless Rats

Confidential
Freedom-2, Inc.

Self clearance (no laser) of FD&C water soluble colorants
20% (w:v) in 20% PEG 8,000; abdominal tattoos



Day 1



Day 6



Day 10



Day 28

Business Problem

- HALT!!!



- phone call from investor/manager from Freedom-2, LLC that we would be involved in an “Interference Action”
- even though our patent had issued, a group at Harvard led by Dr. Rox Anderson had filed a similar patent application > 3 months after we filed

Intellectual Property Issue

- met with Harvard group and began discussions regarding possible merger; without merger, lawyers get rich and no investor will invest until resolved
- they thought “Option Technologies” was a very weak opponent and hired the best Interference attorney;

But, he happened to be one of my father's students

American Intellectual Property Law Association

AIPLA
annual meeting
2012

washington, dc
october 25-27

mariott
wardman park



AIPLA is proud to announce establishment of
The Maurice Klitzman Award

Through the generosity of the Klitzman Family, and Mrs. Mary Ann Klitzman as the initial benefactor, AIPLA is proud to introduce The Maurice Klitzman Award. The Award is intended to provide a junior corporate attorney or corporate patent agent the opportunity to attend the AIPLA's Annual Meeting in Washington, D.C. and to be connected with an experienced AIPLA mentor.



The award was established as a lasting and appropriate memorial to Mr. Klitzman, who passed away in January 2010, for his active service to AIPLA, including serving as a member of the Board of Directors and a member of the Amicus Committee, as well as the active role he took in educating many new patent attorneys, both as a senior corporate patent counsel and as an adjunct law professor. His heart and soul were dedicated to training young patent attorneys and helping them to develop a broad approach to IP Law with a conviction to moral principles and ethics. Mr. Klitzman also promoted and recognized innovation by helping found the National Inventors Hall of Fame. His career was a unique blend of corporate IP law, heart-felt support for the inventor and shaping the mindset of future IP leaders.

...orts training for young patent attorneys, and providing them access opportunities and top quality educational programming. The award person's reasonable travel and accommodation expenses for the du- eeting; namely, coach air or train fare, hotel accommodation at the el, complimentary registration and function tickets and incidental rtation. The recipient of the award will be assigned a mentor to pro- furing the meeting and facilitate the opportunity to meet members adership. We look forward to welcoming the first recipient of the in Award at the 2011 Annual Meeting, October 20-22, 2011.



www.aipla.org/events/2011Annual to apply online today!

Thursday Luncheon 12:30 – 2:00 pm

(Tickets required)



Hon. David J. Kappos
Under Secretary of Commerce for Intellectual Property and
Director of the United States Patent and Trademark Office

Visit www.aipla.org/events/2011annual often for updates.

Afternoon Tracks 2:00 - 3:30 pm

1 Patent Eligibility (101) and Indefiniteness (112)
Moderator: Raymond Van Dyke, *Van Dyke Law*, Washington, DC

Madness in Methods: Claiming Inventions Relating to Personalized Medicine
James Kelley, *Eli Lilly and Company*, Indianapolis, IN

2 The Implications of Government Involvement in Technical Standard Setting for Standards and IP
Moderator: Monica M. Barone, *Qualcomm Incorporated*, San Diego, CA

Gridlock or Greased Lightning? The Future of Patents and Standards for the National Smart Grid
Jorge L. Contreras, *American University*, Washington, DC

3 Understanding the Real Value of Your Patent Portfolio
Moderator: Richard D. Kirk, *Bayard*, Wilmington, DE

You Think Your IP is Worth Something? Prove It!
Michele Riley, *Invotex Group*, Baltimore, MD

Reasonable Royalties after Lucent and



washington, DC

Award application deadline: September 15, 2011

Winner selected: October 3, 2011

Award includes:
Coach airfare or train fare, hotel accommodations at the conference hotel, registration and functions tickets, and incidental ground transportation.

Merger with Anderson group

12-month delay in beginning next steps of building company, including financing

But now, we had the best team and money

- Also, Bob Langer agreed to help

Product Development

- 2004 hire PhD chemical engineer from MIT/Tufts (Bob Langer's group)
- discuss prototypes
- initiate biodistribution studies:
 - What size particles?
 - Where do tattoo pigments go?
 - Where do we want them to go?

- Three likely products
 - Permanent but new colors, fluorescent, less blurring
 - Disappearing (time-limited)
 - Permanent but erasable

Business Decision to Publicize

**Finances were low so CEO decided to
issue press releases in 2006**

Press Reports April, 2006 to July, 2008

Laser Focus World (April 17, 2006)

ABC 7 News - Washington DC (June 10, 2006)

WMSLUK.com (online radio station based in the UK)

Ananova – UK Website

NPR (September 25, 2006)

Self Magazine (September 2006)

Pittsburgh Post-Gazette (October 11, 2006)

NBC10.com (WCAU Philadelphia) Video (October 16, 2006)

Harvard University Gazette (October 19, 2006)

Beauty Flash (2006), page 72

The Hartford Courant (December 2, 2006)

Fortune Small Business (December 2006)

Skin and Allergy News (November 2006)

Plasmatic.com (October 26, 2006)

World Net Daily (October 20, 2006)

Pick-Up of Press Release:

Freedom-2, LLC press release: Offering the First Permanent but Removable Tattoo Ink (October 18, 2006)

Canadian Web site (Canadian Body Mod Community)

Yahoo News: Entertainment

Yahoo Finance

The Hollywood Reporter Online

Lycos (very popular search engine at the time)

The Dallas Morning News

Entertainment Zone

MomMD (Connecting Women in Medicine)

Hollywood MVP

WHAS-11 (Louisville, KY TV Station Portal)

Smithsonian (December 30, 2006)
CareFair.com – Switzerland (December 30, 2006)
TCPalm - FL Daily - Treasure Coast and Palm Beach - (Dec, 2006)
ABC News (December 28, 2006)
Popgadget - Personal Technology + Innovative Lifestyle for Women
(December 27, 2006)
Gizmodo (December 27, 2006)
Medgadget (December 26, 2006)
Engadget (December 26, 2006)
The Repository, Canton, OH (December 26, 2006)
Birmingham News (December 25, 2006)
Seattle Times (December 24, 2006)
Kitasup Sun (December 23, 2006)
St. Paul Pioneer Press (December 22, 2006)
LA Times (December 11, 2006) (Original)
Max World News (December 6, 2006)

2007

Smithsonian Magazine (January 2007)

Medical Device Online (January 22, 2007)

The Metro West (January 19, 2007)

Photonics.com (January 19, 2007)

Worcester Business Journal (January 19, 2007)

DrugLinx (January 19, 2007)

The Denver Business Journal (January 18, 2007)

The Red Herring (January 18, 2007)

The Boston Globe (January 18, 2007)

The Boston Stock Group (January 18, 2007)

The Knowledge Express (January 18, 2007)

Health Care Sales and Marketing Network (January 18, 2007)

Genetic Engineering & Biotechnology News (January 18, 2007)

Wall Street Journal - Online Quote section (January 18, 2007)

The Denver Post (January 18, 2007)

Fibre to Fashion (January 4, 2007)

The Fayetteville Observer (January 3, 2007)

Scripps News Service (January 2, 2007)

Yahoo News (July 19, 2007)

The Providence Journal (July 18, 2007)

Daily Breeze – LAX to LA Harbor (July 15, 2007)

Riverside Press-Enterprise (July 14, 2007)

Tech Review (July 13, 2007)

Medical News Today (July 12, 2007)

Polish Website_(July 12, 2007)

The Press Syndicate – San Bernadino, CA area (June 26, 2007)

The International Herald Tribune (June 17, 2007)

The New York Times (Sunday, June 17, 2007) Front Page

The Seattle Times (June 17, 2007)

Fox News Online (May 14, 2007)

Boston Globe (February 26, 2007)

Mass High Tech (January 12, 2007)

The Rod Ryan Radio Show (January 5, 2007)

KG-TV San Diego (January 5, 2007)

NBC – San Diego (July 31, 2007)

Newsday (July 23, 2007)

The Boston Globe (July 27, 2007)

IT Wire - Australia (July 27, 2007)

CBS 11 News Providence, RI (July 20, 2007)

Science Daily (July 20, 2007)

AP Story ran in the following publications:

Washington Post (July 19, 2007) (Original)

Sydney Morning Herald (July 21, 2007)

Paris Herald Tribune (July 20, 2007)

Brisbane Times, Australia (July 20, 2007)

Herald News Daily - The Voice of the Dakotas (July 19, 2007)

Business Week (July 19, 2007)

Newsday (July 19, 2007)

Daily Times, Pakistan (July 19, 2007)

South Florida Sun-Sentinel.com, FL – (July 19, 2007)

Jordan Falls News, IA (July 19, 2007)

CNN.com (July 19, 2007)

ABC News – Wash., DC - World News Tonight Story (Aug 28, 2007)

Chicago Tribune (August 19, 2007)

Ran LA Times Story

Buddy TV (August 16, 2007)

Miami Ink (August, 2007) “Removable-ink-not-allowed-in”

CTV.ca Canada (August 13, 2007)

Pain Magazine (August, 2007)

Print issue only

ABC World News Tonight (August 12, 2007)

Impact News (August 9, 2007)

Daily India.com (August 8, 2007)

News 8 Austin, TX - Ivanhoe Broadcast News (August, 7, 2007)

Discovery News (August 7, 2007)

The Daily Mail - UK (August 3, 2007)

The Guardian - UK (August 2, 2007)

The Kentucky Post - Riverside Press Syndicate story (July 31, 2007)

Georgia College and State Universities Campus News (Nov., 2007)

Chemical and Engineering News (November 12, 2007)

Time Magazine (Nov. 12, 2007)

Courier Post (Sunday, November 4, 2007)

The Galveston County News (Sunday, November, 4, 2007)

Georgia Straight, Vancouver, Canada (November 1, 2007)

Science News (Oct. 13, 2007) Cover Story

BET - The 5ive (October 10, 2007)

Segment on culture show – link no longer up.

Courier Post - Camden, NJ (October 4, 2007)

Courier Press (October 1, 2007)

New York Magazine (October 1, 2007 issue)

CNN Health Minute (September 17, 2007)

Wall Street Journal (September 17, 2007)

CNN *Technology Pioneers* (sched September 16, 2007)

Fox Chicago (September 5, 2007)

Bloomberg News (August 30, 2007) -

(Toronto Star, Boston Globe, The Virginian Pilot, Vancouver Sun)

AOL Top Products of the Year

Philadelphia Business Journal (December 14, 2007)

Fortune Small Business (December 2007/January 2008)

Medill News-News Service for Greater Chicago Area – (Nov., 2007)

Now Magazine, Toronto, Canada (November 29, 2007)

CBS - KKTU- Denver, CO (November 19, 2007)

ABC - WHAM - Rochester, NY (November 16, 2007)

The Philadelphia Business Journal (Nov. 15, 2007) Online

2008

USA Today Weekend (January 20, 2008)

The Age Australian Newspaper (February 7, 2008)

The Daily Journal (March 17, 2008)

Allure Magazine (May 2008)

Telemedicine Law Weekly (June 28, 2008)

Biotech Law Weekly (June 27, 2008)

Drug Week (June 27, 2008)

Lab Law Weekly (June 27, 2008)

Biotech Week (June 25, 2008)

Healthcare Finance, Tax & Law Weekly (June 25, 2008)

Health & Medicine Week (June 23, 2008)

Pharma Business Week (June 23, 2008)

Cosmetics Design.com (June 12, 2008)

Special Chem–Innovations and Solutions in Cosmetics (June, 2008)

The Philadelphia Business Journal (July 11, 2008)
Tattoo MD (July 2, 2008)
Health Business Week (June 23, 2008)
Medical Patent Week (June 29, 2008)
Pharma Investments, Ventures & Law Weekly (June 29, 2008)
Healthcare Mergers, Acquisitions & Ventures Week (June 28, 2008)
Law & Health Weekly (June 28, 2008)
Medical Imaging Week (June 28, 2008)
Obesity, Fitness & Wellness Week (June 28, 2008)

SCIENCE NEWS

THE WEEKLY NEWSMAGAZINE OF SCIENCE

OCTOBER 13, 2007 PAGES 225-240 VOL. 172, NO. 15

the most invasive species
snake beats frog toxins
drug-resistant bug spreads
nobel for gene engineering

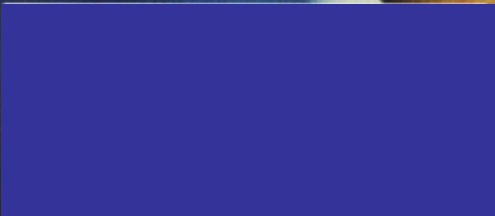
www.sciencenews.org



*Fabina
Birgit
Claudia*

**not
permanent**

TATTOO INK ALLOWS CHANGE OF HEART



Colbert Report; 7/25/07



The image shows a video player interface for a segment titled "THE WORD" with the subtitle "No Regrets". The video features Stephen Colbert, a man in a grey suit and purple tie, sitting at a desk and holding a pen. The background is a blue studio set with a world map and a row of stars. The video player includes a progress bar showing 00:00 / 03:40, a play button, a volume icon, and a share button. Below the video player, the text reads "Wednesday, July 25, 2007" and "The Word - No Regrets". A description follows: "Stephen believes that you should never regret a decision but instead get it tattooed on your forehead. (3:41)". To the right of the description, it shows "Views: 346", "Posted: 07/25/2007", and "0 Comments". A "Save to Profile" button is visible at the bottom right.

00:00 / 03:40

00:52/03:40 SHARE

Wednesday, July 25, 2007

The Word - No Regrets

Stephen believes that you should never regret a decision but instead get it tattooed on your forehead. (3:41)

Views: 346

Posted: 07/25/2007

0 Comments

Save to Profile

<http://www.colbertnation.com/the-colbert-report-videos/183173/july-25-2007/the-word---no-regrets>

***CNN shot hours of video about
our company and they were
going to feature us on their
“Pioneers in Technology” show
at 5pm on Sunday Sept 16, 2007***

This will transform our company!



Police: No bail for O.J. Simpson in Las Vegas robbery arrest

SUNDAY SEPTEMBER 16, 2007 03:30 PM EDT

LAS VEGAS, Nevada (CNN) --



Former football star O.J. Simpson will be held without bail after his arrest on robbery and assault charges, police announced late Sunday.

Simpson is accused of having directed several other men in an alleged armed robbery of sports memorabilia in a room at a Las Vegas hotel room.

Las Vegas authorities said they have no information leading them to believe Simpson was carrying a firearm during the alleged incident at the Palace Station Hotel and Casino

INVENTION OF THE YEAR	CARS & BUSES	AIRCRAFT	SPACE	ROBOTS	ENTERTAINMENT
LAW & ORDER	LIVING	ENVIRONMENT	ARCHITECTURE	FASHION	COMPUTERS
HEALTH	TECH BUYER'S GUIDE	GADGET OF THE YEAR	BEST INVENTORS	VIEWPOINT	GADGET POLL RESULTS

Fashion

◀ Previous Next ▶

LATEST HEADLINES

No Regrets



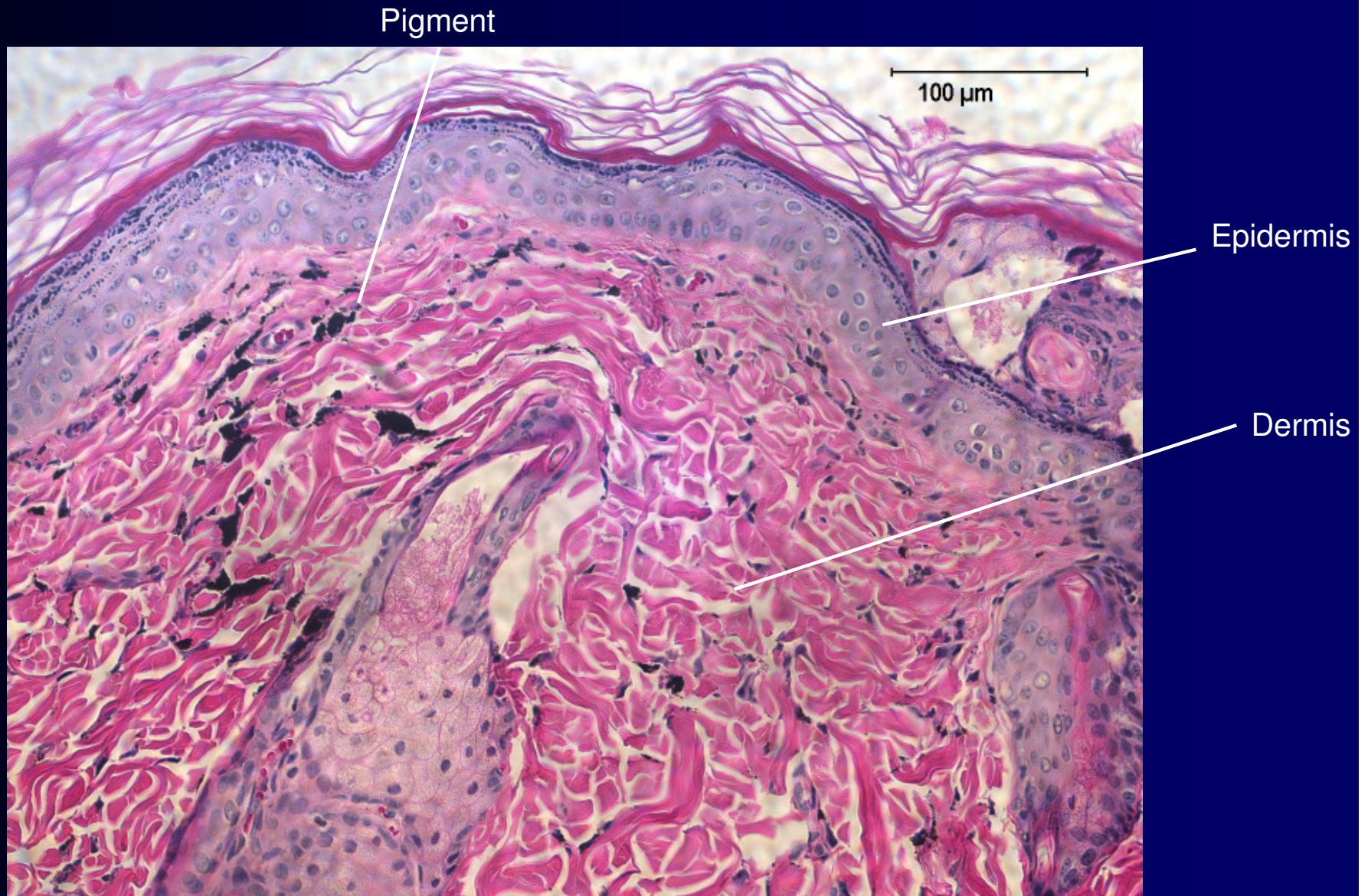
BRANDON BOND

Now that tattoos are more popular than ever, it's about time there's a reliable way to get rid of them. After all, one in five people say they regret getting a tattoo in the first place. Freedom-2 ink is made of biodegradable dyes coated in plastic, instead of the heavy metals most dyes use, so tattoos can be removed with a single treatment. When a laser zaps the capsules, they break open, and your body safely reabsorbs the dye.

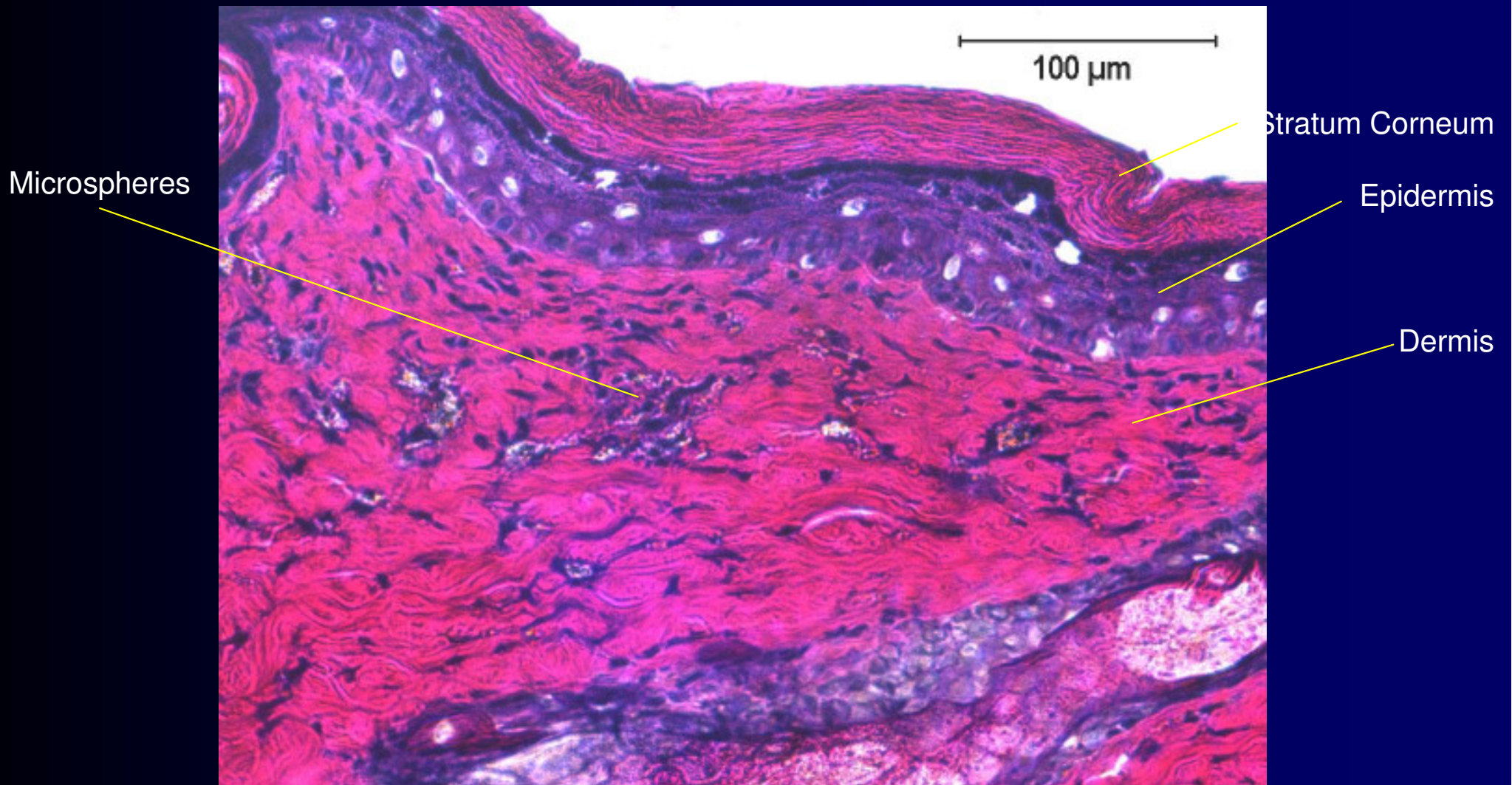
2007

**Overall
Invention
of the
year:
iPhone**

Histopathology of conventional tattoos



Histopathology of Freedom2 tattoos



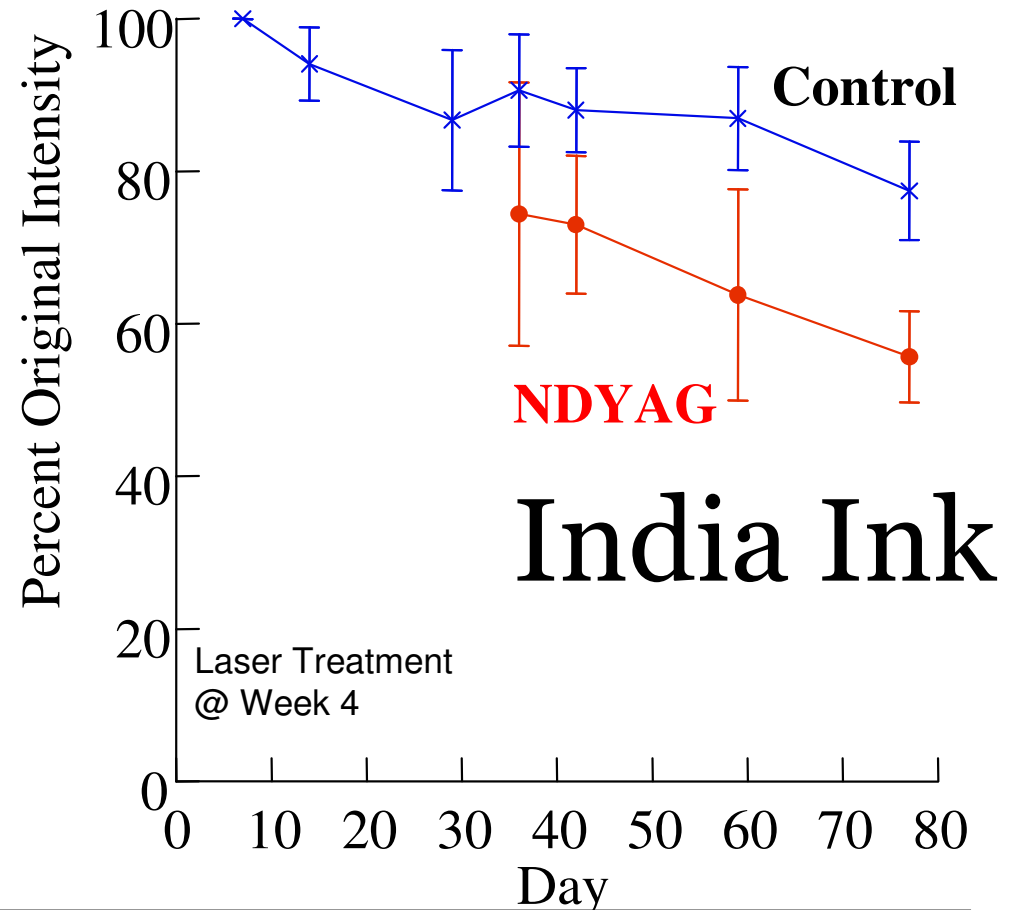
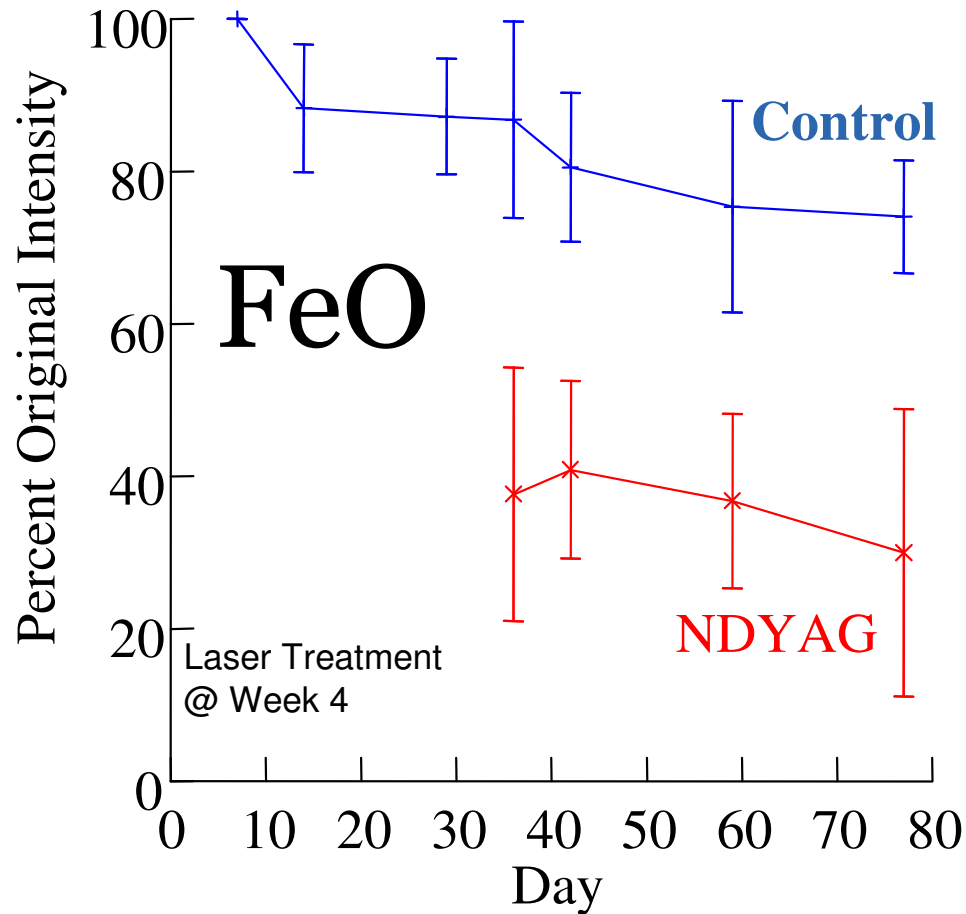
Microencapsulation

Production Methods:

- Solvent Evaporation

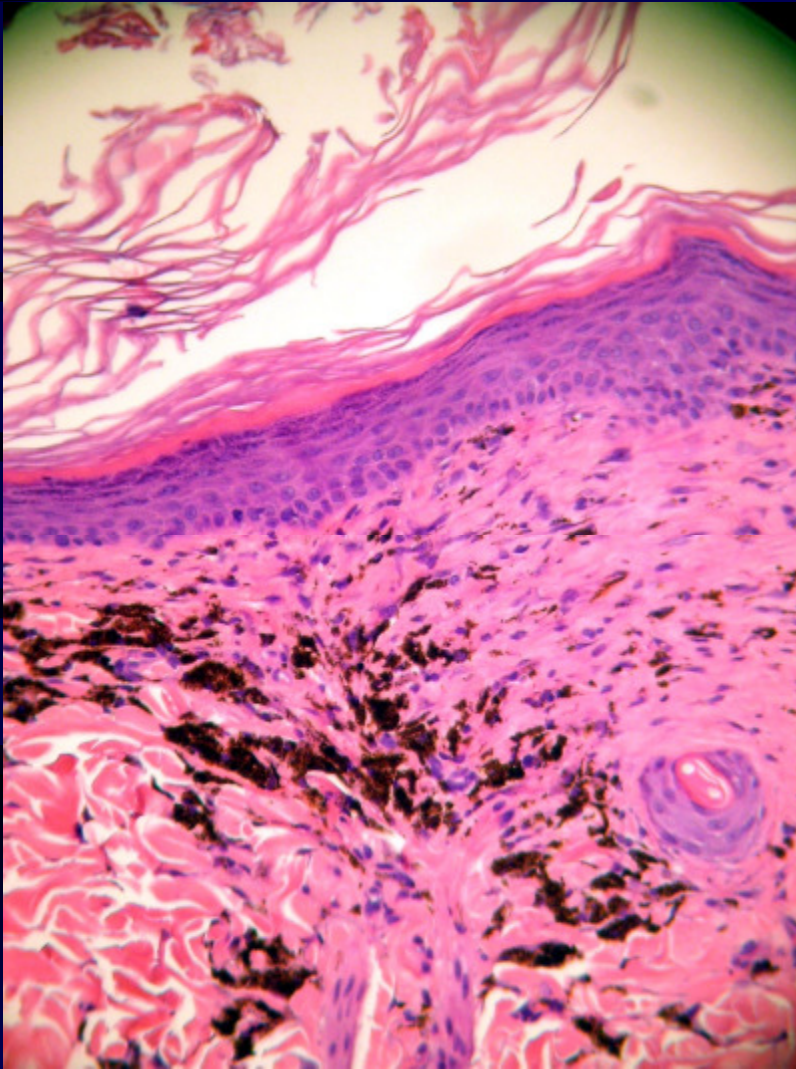
- Anhydrous Precipitation

Laser Treatment of Encapsulated Iron Oxide and India Ink and Tattoos



Concerned with the variability in clearing of pigment after laser treatment.
Conclusion, inflammatory response is a major factor in removability.

Freedom-2 Human Biopsy (between left lateral triceps and deltoid muscles)



**Some pigment
intracellular, some in
collagen matrix**

Pigment can migrate from papillary dermis to
reticular dermis over time

- **July, 2008; bought a building near Philadelphia for product development, production, tattooing, removal, and administration and investment**
- **In late Aug, 2008, Board approves major product launch for Jan, 2009. We rapidly get verbal commitments for \$15M for launch; financing to close Sept 30, 2008**

Lehman Files for Bankruptcy; Merrill Is Sold

By [ANDREW ROSS SORKIN](#)
Published: September 14, 2008

*This article was reported by **Jenny Anderson**, **Eric Dash** and **Andrew Ross Sorkin** and was written by Mr. Sorkin.*

[Enlarge This Image](#)



Mark Lennihan/Associated Press

A figure in a window at Lehman Brothers headquarters in New York on Monday.

In one of the most dramatic days in Wall Street's history, [Merrill Lynch](#) agreed to sell itself on Sunday to [Bank of America](#) for roughly \$50 billion to avert a deepening financial crisis, while another prominent securities firm, [Lehman Brothers](#), filed for bankruptcy protection and hurtled toward liquidation after it failed to find a buyer.

The humbling moves, which reshape the landscape of American finance, mark the latest chapter in a tumultuous year in which once-proud financial institutions have been brought to their knees as a result of hundreds of billions of dollars in losses because of bad mortgage finance and real estate investments.

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Greenspan to Congress “I WAS WRONG”

The image is a screenshot of a YouTube video player. At the top, the browser tab reads "I Was Wrong! Alan Greenspan - YouT...". The YouTube logo is on the left, followed by a search bar and navigation links for "Search", "Browse", "Movies", and "Upl...". The video title is "I Was Wrong! Alan Greenspan" by the channel "rtdhdq", which has "3 videos" and a "Subscribe" button. The main video frame shows Alan Greenspan speaking at a hearing. A "LIVE" indicator in the top right corner of the video shows "10:39 am ET". A lower-third graphic identifies him as "ALAN GREENSPAN, Former Chairman, Federal Reserve Board, 1987-2006" and includes the "C-SPAN" logo. The video player controls at the bottom show a play button, a volume icon, a progress bar at "1:39 / 5:05", a "CC" icon, a red comment icon, "240p" resolution, and icons for share, playlist, and full screen.

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ALAN GREENSPAN
Former Chairman
Federal Reserve Board, 1987-2006

C-SPAN

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1:01

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4:13

The Washington Post

Brooksley Born, the Cassandra of the Derivatives Crisis

By Manuel Roig-Franzia
Washington Post Staff Writer
Tuesday, May 26, 2009

Friends nudge the woman who saw the catastrophe coming.

THIS STORY

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- Regulation Debate Hinged on Arcane Point of Law

They want Brooksley Born to say four words, four simple words: "I told you so."

Ah, but she won't -- not at legal conferences or dinner parties. Not even in a quiet moment in her living room, giving her first interview with a major news organization since last fall's economic collapse.

She just smiles, perched ever so properly in an upholstered armchair at her Kalorama home.

"More coffee?" she asks daintily, changing the subject.

A little more than a decade ago, Born foresaw a

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As head of the Commodity Futures Trading Commission in the '90s, Born would wake up at night "in a cold sweat" we know too well, came to pass. (By Carol C. Lee for the Post)

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Ms. Born foresaw the problem, but Greenspan convinced Congress to strip \$\$\$ and regulatory authority from her CFTC office

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"We didn't truly know the dangers of the market, because it was a dark market," says **Brooksley Born**, the head of an obscure federal regulatory agency -- the Commodity Futures Trading Commission [CFTC] -- who not only warned of the potential for economic meltdown in the late 1990s, but also tried to convince the country's key economic powerbrokers to take actions that could have helped avert the crisis. "They were totally opposed to it," Born says. "That puzzled me. What was it that was in this market that had to be hidden?" [\(more...\)](#)

THE GO-GO '90s

Chapter 1
The Go-Go '90s
Alan Greenspan rules the economy and "the less regulation, the better" is the administration's attitude toward Wall Street.
11:31

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Wednesday January 14, 2009, 8:00 am EST Yahoo! Buzz Print

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SCOTTSDALE, Ariz.--(BUSINESS WIRE)--eFoodSafety.com, Inc. (OTCBB: EFSF - News) a leader in the research and development of nutraceutical products today announces that on January 12, 2009 it entered into a definitive share exchange agreement with Freedom2 Holdings, Inc., a worldwide skin care company known for its pioneering development of a permanent and safer, more easily removable tattoo ink.

Related Quotes In a stock for stock exchange, Freedom2's former shareholders will gain a 20% ownership position in the newly combined entity.

Company now called Nuvilex

Conclusions

- **Concept of microencapsulation to facilitate removal was demonstrated in rodents**
- **There is wide variability and poor predictability in the response of individual humans**

Acknowledgments

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Development of Permanent but Removable Tattoos

Bruce Klitzman, PhD

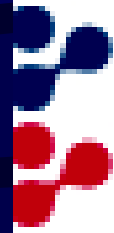
Associate Professor of Surgery, Biomedical Engineering, and Cell Biology

Duke University, Durham, NC USA

Studies have shown that 50% of tattoo recipients have regret. All tattoos are removable, although the removal process may have serious side effects. Surgical excision, sometimes after tissue expanders generate extra adjacent skin for local flaps, is the most aggressive technique and has the ability to completely remove tattooed tissue. Noninvasive laser irradiation of skin can effectively cause removal of a fraction of tattoo pigment. Numerous alternative techniques can encourage removal of some pigment, often through inducing a cutaneous inflammatory response. However, rigorous well controlled studies of removal efficacy are severely lacking. Our interest tattoo ink removal had its beginnings in breast reconstruction. Some patients need to return a tattooed nipple-areola on a reconstructed breast to an aesthetically pleasing position following shifting of the breast mound. We designed a more removable tattoo ink by starting with colorant that would be easily cleared by the body, but stabilized it through microencapsulation. Removal could then be accomplished by disrupting the encapsulating shell instead of requiring more extensive disruption of an entire pigment particle. Our first failed attempt relied on microencapsulating water soluble dyes in polyolefin. Then, a team at Harvard University, led by Dr. Rox Anderson, challenged our patent. After many months of legal maneuvers, it was determined that we were indeed the inventors of microencapsulated tattoo ink. The two groups then merged. With leading experts in microencapsulation, we attempted microencapsulation of water soluble dye in polymethyl-methacrylate. A fundamental challenge in the use of water soluble dye is the generation of very high osmotic pressure. Low dye volume percentages (about 10% or less) could successfully retain the dye. Higher payload volumes led to generation of osmotic pressure that disrupted the capsule and released the dye. Next, we investigated using insoluble pigment particles. Preclinical studies in hairless rats and guinea pigs showed significantly increased removability. One laser treatment effectively removed 80% of tattoo intensity, while only 20% of conventional ink was removed in a single identical laser treatment. While these results proved our concept, effective removal in humans with any technique continues to be highly variable and difficult to predict because of variability in the inflammatory response.

Disclosure: Dr. Klitzman has less than 0.1% ownership in Nuvilex, Inc., producer of InfnitInk.

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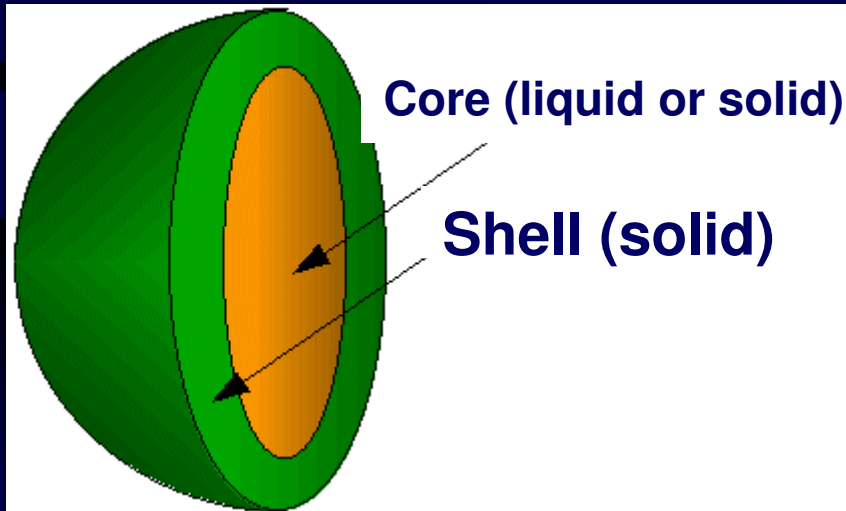


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