Yale technology licensing and partnership opportunities 2015

Non-Therapeutics

1. DIGITAL TECHNOLOGY

Parallel Database System
Secure compliant database system that replicates remotely and scales near-linearly in the cloud for developers, marketers and businesses. Yale prototype Calvin matches Oracle and IBM database transaction speeds on low-cost NoSQL commodity servers.
OCR #5479 Patent 8,700,563 Software
Team: Daniel Abadi, founder of Hadapt.

Software Defined Networks (SDN) programmer
Suite of tools that makes network switches easier to program. Maple is a substantially simplified programming interface for existing or new controller platforms. Multicore McNettle is the fastest SDN controller on the market.
OCR #6121 Patent Application and Software
Team: Richard Yang, Maple Networks LLC, Yale ITS pilot

Online learning model
Anomaly detection models transients without training sets, enabling on-the-fly acoustic or electric transient detection.
OCR #5875 Demo
Team: Ronald Coifman

System and Method for Document Analysis
Sparse matrix decision-making algorithm provides data analytics that is agnostic to the data. Current prototype is tuned to increase the yield of questionnaires.
OCR #4691 Pat. 11/165,633 Demo
Team: Ronald Coifman

Second Opinion
Intelligent EHR dashboard provides empirical medical reference comparing an input such as hematology test result with a large database of historical demographical data.
OCR #4691 Software
Team: Ronald Coifman, Yale CORE
**Sparse Superposition codes**
Computationally efficient encoding and decoding algorithm that will be reliable at network information theory limits where current LDPE and Turbo codes will no longer be rate optimal.  
OCR #5421 Pat. 13/696,745  
Team: Andrew Barron

**Compositional Certified Resource Bound Analysis**
Certified prediction of resource usage for worst case execution time analyzers (memory usage, clock usage, network traffic) and also for detection of malware and Trojans.  
OCR #6701 Software and Patent  
Team: Zhong Shao lab, YEI team in formation

2. DESIGN SOFTWARE

**Bi-Scale Material Design**
Interactive High Quality Surfacing material design editor for cosmetic, textile, architectural and industrial design. Define the bulk material, and achievable geometries and reflectance and then realize the appearance at scale, or do the inverse.  
OCR #5864 Software  
Team: Julie Dorsey, founder of Mental Canvas

**Texture Exemplars**
Software that extracts texture from images and synthesizes seamless randomized surfaces, for renderers and games developers.  
OCR #5733 Software, Patent 9,007,373  
Team: Holly Rushmeier

**CAD for photonic circuits**
Photonic CAD plug-in for design of integrated photonic circuit layouts, apparatus for automatic characterization of devices and circuits.  
OCR #6223 Software, OCR #6224 Prototype  
Team: Hong Tang lab

3. SEMICONDUCTOR DEVICES

**Unipolar CMOS**
The 2020 transistor. High electron mobility CMOS based on tri-gate architecture uses only n-doping. Also promises lower power operation for Thin Film Displays CMOS.  
OCR #4977 Pat. 8,384,156, OCR #6375 Patent  
Team: TP Ma, founder of Alacrity

**High power HBT**
High power high frequency Heterojunction Bipolar Transistor.  
OCR #1518 Pat. 6,809,400 Team: TP Ma lab
4. SOLID STATE LIGHTING DEVICES

Nanoporous (NP) GaN mirror
The use of a lateral etching technique to incorporate nanoporous layers in post processing of GaN production enhances light extraction, easily creates DBR mirrors and provides GaN manufacturers with other capabilities that can easily be integrated into their processing steps.
OCR #5705 Pat. 13/923,248

Recycling GaN wafer
Thin film slicing of bulk GaN substrate after photocleave. Also a manufacturable route to flexible GaN for high brightness, large, flexible blue or green lighting or displays.
OCR #6160 Patent

Large area GaN-on-Si
GaN template approach for epiwafer manufacturers, uses a dispersed micro ‘GaN tiles’ method that entirely eliminates thermal or lattice mismatch, enabling high quality growth of 16” wafers without bowing.
OCR #5943 Patent

Integration of GaN in CMOS
High quality GaN-on-Insulator (GaNOI) growth without the need for any seed GaN crystal is an enabler for heterogeneous integration of GaN in CMOS.
OCR #5811 Pat. 61/600,413

Blue GaN VCSEL
A new route to make GaN VCSEL laser technology practical for Solid State Lighting and accessible for LED manufacturers, applications include automobile headlighting.
OCR #6283 Patent

GaN edge-emitting Laser Diode
A method to make blue and green III-Nitride edge emitting laser diode (LD) of high confinement factor with lattice matched cladding layer, will greatly improve existing edge emitters used in automobile headlighting.
OCR #6385, #6504, #6697 Patent
Team: Jung Han lab, founder of Saphlux; YEI team in formation
Speckle-free imaging/projection source
Random Laser, Chaotic cavity laser and degenerate lases, each producing spatially incoherent laser emission for speckle-free and cross-talk free illumination. The discovery of spatially incoherent lasers enables a transition from serial to parallel image acquisition. Solid state sources are in development for Optical Coherence Tomography (OCT), confocal microscopy and non-medical applications such as digital light projectors and barcode reader systems.
OCR #5659 Pat. 14/110,937 OCR #6419 OCR #6676 Patent
Team: Hui Cao, Michael Choma, Mode OneK LLC

Anti-Laser absorber
Coherent Perfect Absorber that completely absorbs incoming radiation with zero reflection, applications in free-space and on-chip optical communications.
OCR #5248 Pat. 13/380,625
Team: Douglas Stone lab

Quantum cascade laser
High power mid-IR laser >1W with high directionality, co-developed with Princeton University.
OCR #937 Pat. 6,134,257 Pat. 6,333,944
Team: Douglas Stone lab

Efficient fiber light coupler
Efficient III-Nitride mode converter efficiently couples photon detectors to waveguide.
OCR #6574 Patent
Team: Hong Tang lab

Large area III-Nitride waveguide
Thick Aluminum Nitride deposition for optical waveguide applications solves bandwidth and power dissipation challenges reaching 80 GBps in integrated photonic circuits for chip-to-chip optical interconnects (OI), modulators and optical frequency combs.
OCR #5914 Know-how OCR #6226 Patent
Team: Hong Tang lab

‘Light Force’ device
Today’s electronic devices all rely on operating on electron charges through electrostatic interactions. This discovery opens up a new class of nanomechanical photonic devices that operate on gradient optical forces.
OCR #4952 Pat. 8,639,074
Team: Hong Tang lab

Optical frequency comb
Aluminum Nitride optical comb generator
OCR #6226 Patent
Team: Hong Tang lab
5. QUANTUM COMPUTER ENGINEERING

Solid state Qubits
3D integration of multiple solid-state qubits with microfabrication of devices and circuits.
OCR #6082 #6567 #6566 #6565 #6564 #6559 Patent application
OCR #6563 #6562 #6561 #6560 Patent application

Josephson directional amplifier
Integratable simple directional amplifier component that amplifies ultra-low noise microwave signals with efficient read-out.
OCR #6281 Patent

Wireless Josephson amplifier
Compact superconducting integrated Josephson circuit that amplifies microwave signals without the need for a physical electrical connection to the surrounding environment.
OCR #6352 Patent

Team: Robert Schoelkopf lab, Michel Devoret lab, Yale Quantum Institute.

6. SURFACES

High surface area metal electrodes
Bulk Metallic Glass nanowires for fuel cells and energy storage applications
OCR #5451
Team: Andre Taylor, Transformative Devices lab

3D electrode surface with substitution
Bulk Metallic Glass substitution process enables 3D metals electrode and collector design, optimization and incorporation of transition metals for electrochemical applications.
OCR #6394
Team: Jan Schroers lab, Andre Taylor, Transformative Devices lab

De-icing, de-wetting and low friction metal surfaces
Generation of ceramic-metallic composite or porous surfaces in 3D molded bulk metallic glass parts by sacrificial templating of deposited coatings, applicable to large area sheets or thermoplastic formed parts.
OCR #6519
Team: Jan Schroers lab, SuperCool Metals LLC

Amorphous Alloy discovery
High throughput combinatorial screening tool for the discovery and optimization of new Bulk Metallic Glass alloy compositions.
OCR #6186
Team: Jan Schroers lab
**Structurally colored coating**
Non-iridescent structurally colored coatings comprised of inert nanoparticles mimic bird and butterfly nanostructures.
OCR #5213 Know how
Team: Hui Cao lab

**Semiconductor cleaning technique based on ‘Gecko feet’**
Efficient dry removal of nanometer and sub-nanometer particulate contamination from solid surfaces using polymeric micropillars.
OCR #6761
Team: Hadi Izadi, YEI team in formation

**Robust catalyst support**
A hybrid CNT catalyst support that prevents carbon poisoning in Direct Methanol Fuel Cells. Also stable at high operating temperatures, could replace carbon or ceramic monolith substrates.
OCR #5427 Know-how

7. **THIN FILMS**

**The new Graphene: Black Phosphorous**
Method for synthesis of high band gap thin film Black Phosphorus on flexible substrates.
OCR #6595 Patent
Team: Fengnian Xia Lab

**Nanotube yield**
High yield carbon SWNT, MWNT and advanced dispersion techniques, Boron nanotubes, superconducting Boron nanostructures, GaN nanowires, aligned AlGaInN nanowires.
OCR #1250 Pat. 7,357,983
OCR #1613 Pat. 7,531,892
OCR #1614 Pat. 7,258,807
OCR #1736 Pat. 7,407,872
Team: CRISP Center, Lisa Pfefferle lab

**Polymer filter for mixed-metal recovery**
Polymer-CNT filter apparatus selectively separates bi-mixed metal stream in E-waste recycling.
OCR #6990 Patent
Team: Desiree Plata lab, Center for Green Chemistry team
**Bulk polymer temperature sensor**
Simple sensor material comprising polymer/copolymer nanorods for high resolution 2D pressure and temperature sensing.
OCR #4801 Pat. 8,179,026
Team: UMD

**Increased selectivity nanofiltration membrane**
Self assembled polymeric composite with oriented 1nm nanopores and sharp cutoff (extremely thin 300 nm), provides increased selectivity without sacrificing permeability.
OCR #6640 Patent

**Temperature switchable pores nanofiltration membrane**
Block copolymer film with temperature switchable pores on 1-10nm lengthscale.
OCR #6646 Patent

**Field aligned manufacturing platform**
Block co-polymer membrane roll-to-roll manufacturing provides exceptional control of morphology.
OCR #5540 Patent 8,748,504
Team: Chinedum Osuji and Menachem Elimelech lab, founder of Oasys

8. SOLAR PV

**Photocatalytic metal oxide**
Stable metal oxide grown on GaAs for high-efficiency tandem solar cells may generate sufficient photovoltage for stable unassisted water splitting.
Team: Fred Walker, CRISP Center

**Flexible solar cell**
Development of an all-carbon and a hybrid SWNT/Si solar cell platform.
OCR #5378 Know-how
Team: Andre Taylor, Teracon LLC

**Invisible Battery**
Transparent electrodes and battery anodes using a variety of techniques including Spin-spray layer-by-layer, a thin-film polymer CNT spraying and coating technique for enhanced power conversion.
Team: Andre Taylor TDI Lab

**GaAsP solar cell**
GaAsP solar cells on GaP and GaP/Si raise single-crystal Si-based PV efficiency to >30% through III-V integration.
Team: Minjoo Larry Lee lab
9. GREEN CHEMISTRY

**Cobalt oxidation catalyst ‘Artificial Leaf’**
Easy deposition, low cost heterogeneous catalyst Cobalt Phosphine is stable at neutral or alkaline pH operation, works in seawater, for distributed hydrogen or fuel cell applications.
OCR #6209 Patent
Team: Paul Anastas, Center for Green Chemistry, Catalytic Innovations LLC

**Iridium catalyst saves energy in electrochemical processes**
Paint-on catalyst reduces energy overpotential and provides corrosion resistance at a fraction of the cost of Iridium oxide - sets activity and stability records in water oxidation and C-H oxidation, is a monolayer hence low surface loading.
OCR #6156 Patent
Team: Gary Brudvig, Energy Sciences Institute, Catalytic Innovations LLC

**One-pot biomass fractionating**
Single step supercritical transesterification and fractionation of algae and other biomass provides energy efficiencies and produces high value-added upstream byproducts. Biomass conversion techniques extracting high value add products upstream of basic conversion in fuel production.
OCR #6012 Patent

**Transformation of lignin into building blocks for protective coatings**
Depolymerization of lignin into low molecular weight fractions as raw materials for polymer coatings using abundant commercial feedstocks (sugar cane bagasse, palm waste, wheat straw).
OCR #6168 Patent

**Valorisation of lignin: conversion to aromatic platform chemicals**
Depolymerization of lignin into simple monomers (catechols and phenols) using abundant commercial feedstocks (sugar cane bagasse, palm waste, wheat straw).
OCR #6168 Patent

**Manufacture of adipic acid without evolution of NO2**
New CH activation chemistry (oxidation) via a heterogenous cobalt catalyst (eg. phenethylalcohol to acetophenone, 1–butanol to butyric acid, cyclohexane to cyclohexanone, alpha–methyl styrene to acetophenone, cyclohexene to adipic acid.
OCR #6823 Patent
Team: Paul Anastas lab, Center for Green Chemistry

**Glycerol conversion into Acetic Acid**
Novel precatalyst scaffold for cross coupling reactions complimentary to biodiesel production.
OCR #6516 Patent
Team: Nilay Hazari lab, Robert Crabtree lab
10. ENVIRONMENTAL

Environmental Performance Index (EPI) manual
A capacity building manual for corporate, national or global ecosystem index developers, based on the Yale EPI launched at 2012 World Economic Forum.
OCR #6061 Software/Manual
Team: Daniel Esty, Yale Center for Environmental Law and Policy, Columbia University

The Criticality of Metals Calculator
From the founders of Industrial Ecology, data assimilation software generates assessment reports for business and government that evaluates their vulnerability to supply risk for metals (all 62 metals).
OCR #5892 Methodology
Team: Tom Graedel, Center for Industrial Ecology lab, Criticality Consortium

Methane in groundwater analysis
Methodology for impact analysis using pre- and post- fracking exploration data.
Team: James Saiers

Urban stormwater design methodology
Designs for better urban green infrastructure for better storm water quality and hydrology
Team: Gabe Benoit

Coastal infrastructure redevelopment strategies
Coordinating road networks, utilities, rail with urban and economic redevelopment, ranking and prioritizing risk, expanding the reach of models developed in Connecticut.
Team: Alex Felson, Urban Ecology and Design Lab

Computational fluid dynamics transport model
Models for packed solid particle/granular behavior under flow conditions
Team: Corey O’Hern group

Detection, fate and transport of fungal pathogens
Measurement of human exposure to microorganisms (whether good or bad) using affordable DNA profiling combined with air modeling (examples of projects include: full diversity testing for mold inspection or remediation, prediction of microbe growth post flood damage, microbial diversity that increases or decreases asthma severity, food safety and supply chain management).
Team: Jordan Peccia lab, YEI team in formation

11. CLEAN ENERGY

ThermalGreenWall™
Grey water treatment and heat rejection system using living green walls; transforms the living greenwall into a low environmental impact cooling tower replacement for urban buildings.
Thermolytic Brine Heat Engine
A membrane distillation technology enabling power generation from waste heat.
Team: Menachem Elimelech, Colorado School of Mines (T2M)

Membrane vapor gap heat engine
Partial pressure membrane design converts low grade heat to energy.
OCR 6617
Team: Menachem Elimelech lab, founder of Oasys

12. WASTE WATER /POLLUTION MITIGATION

Anti-fouling coating
Nanoparticle coating for pretreatment of RO/FO and UF membranes, also post-processing and repair,
OCR #6378 Pat. 14/122,535 Partner leading
Team: Menachem Elimelech lab, founder of Oasys, Cornell

Onsite anti-fouling treatment
In-situ formation of silver nanoparticles on a reverse osmosis membrane (thin film composite).
Biofouling mitigation surfaces for water treatment and reverse osmosis membranes.
OCR #6221 Patent
Team: Menachem Elimelech lab, founder of Oasys, YEI team in formation

Nitrosamine mitigation
A nitrosamine destruction process that offers control over amine scrubbing efficiency and emissions in carbon capture and storage (CCS) projects.
OCR #5372 Pat. 61/445,652
Team: Stanford University

Chitosan sorbent beads
Environmentally inert sorbent media for arsenic and selenium removal from contaminated process water.
OCR #5312 Know-how
Team: Julie Zimmerman lab

Oil remediation and recovery material
Flexible, mechanically durable sol-gel composites for large area oil capture and recovery can outperform current booms and sorbents.
OCR #6809
Team: Desiree Plata lab, Center for Green Chemistry

Air pollution sensor package
Low cost mobile VOC sensor in development includes both chemical and time resolution, and low cost small research grade sensor package for field measurements of actively regulated air pollutants. Team: Drew Gentner, proposed Yale SEARCH Center

13. ROBOTICS

**Social robots**
Robot assisted behavioral management and teaching tools.
Team: Brian Scassellati

**Audible sonar**
Audio sonar echolocation mapping system for robotic vision, blind persons assist and driver assist.
OCR #6658 Prototype
Team: Roman Kuc

**Adaptive transmission needs no control**
Passively adaptive variable transmission technology keeps linear actuators on robots or mobile tools (such as electric clamps) operating at peak across a range of output performance without the need for external (electric) control.
OCR #6203 Patent

**Multiple-grasp prosthetic hand**
Body-powered multi-grasp 3D printable artificial hand has a mechanically activated adjustable thumb.
OCR #6696
Team: Aaron Dollar, GrabLab, YEI team in formation
14. HEART ASSIST DEVICES

**Wireless Power Delivery**
Constant power transmission over 15cm range and fully implantable controller allows leadless operation of Left Ventricular Assist Devices (LVADs) eliminating the primary cause of infection in LVAD patients.
OCR #5966 Pat. 61/649,496 Pat. 13/843,884, OCR #6024 Patent

**Implantable drive and controller**
Catheter deliverable leadless miniature controller and driver for wireless power supply to implanted thoracic devices and iOS wireless app.
OCR #6069 Patent
Team: Pramod Bonde, Artificial Heart lab, University of Washington, YEI/CBIT team in formation

**Heart Failure Recovery (HFR) device**
Minimally invasive implantable low volume assist pump supports heart recovery in patients post heart failure. The pump is turned on only during recovery phase as needed, HFR system is proposed to extend the life of patients prior to need for transplant or bridge to transplant and mitigate the risk of additional heart failure events.
OCR #6069 Patent

**LVAD Interrogation catheter device**
Diagnosis, and maintenance of LVAD function is performed in a catheter lab.
OCR #6122 Patent

**Boletz pump**
Catheter-delivered non-invasive fully implantable heart assist device with long-term LVAD function.
OCR #6362 Patent

**CAP RVAD pump**
Implantable RVAD system overcomes the limitations of LVADs for uses other than left ventricular.
OCR #6362 Patent
Team: Pramod Bonde, Yale Artificial Heart lab, YEI/CBIT team in formation

15. MEDICAL DEVICES

**Intraoperative Endocrine Surgery autopilot**
Intraoperative software that shortens operating time and increases the accuracy of prognosis for parahyperthyroidectomy (PTH) procedures.
OCR #6076 Software, surgical data
Team: Robert Udelsman surgery

**4D quantitative Stress Echo**
Software upgrade in stress echocardiography scanners precisely and automatically maps out the injury zone.
OCR #6131 Animal trials
Team: James Duncan, University of Washington

**Preemie-Breathe**
Mobile positive airway pressure device replaces CAP for premature infants with DI water and O2.
Team: Anjelica Gonzalez, YEI team

**Falls Prevention**
Falls Prevention and geriatric syndrome methodology, materials and training resources, based on Mary Tinetti’s seminal work on multifactorial etiology. Demonstrated risk factors, cost effectiveness: ‘Keeping people at home’.
OCR #4716 Manual
Team: Dorothy Baker, Denise Acampora, Connecticut Collaboration for Fall Prevention

**Painless Bone biopsy needle**
Combined lidocaine and bone marrow aspiration device reduces operative pain.
OCR #6577
Team: Elliott Brown, YEI/CBIT team

**Invasive ultrasound**
Stylet with micro-transducers opens the way to guided real time procedural vision.
OCR #4716 Manual
Team: Elliott Brown, Ryan Grant YNHH

### 16. NETWORK SYSTEMS

**Sensor networks for monitoring behavior**
Locate and track subjects using existing low cost building CMOS camera infrastructure. Heirarchical programming architecture ‘Sensory Grammars’ infers subject behavior.
OCR #5473 Pat. 14/130,298, OCR #4218 Pat. 8,630,695, OCR #5832
Team: Andreas Savvides, TandemLaunch incubator

**Autonomous bots in social networks**
Positioning of autonomous agents optimizes behavioral outcomes in human social network experiments.
OCR #6782 Patent
Team: Nicholas Christakis lab, Yale Institute of Network Science
17. **RESEARCH TOOLS**

**Electronic nanopore**  
Real time single molecule sequencing via a ‘virtual nanopore’ is a solution to the translocation control problem for next generation sequencers.  
OCR #4915 Pat. 8,294,092

**Electronic nanowire sensor for cell detection**  
Breakthrough reproducibility of functionalized silicon nanowires could lead to point of care cytokine detection application. The patent portfolio includes device, physiologic sample preparation and parallel array calibration techniques, measurement of cellular response and regenerative nanowires.  
OCR #4496 Pat. 12/517,230, OCR #5364, OCR #6055 Patents, OCR #5164 Pat. 13/218,864  
Team: Mark Reed lab, Tarek Fahmy lab

**Heterotypic microtissue engineering**  
Immuno-DNA directed cell assembly technique, tethering of heterotypic cells creates a specialized stem cell niche for injectable therapy.  
OCR #5507 Know-how

**Large-scale bioengineered vascular tissue**  
De novo bioengineering of large-scale (1 cm² +), perfusable, functional endothelialized microvessel networks on a chip (in vitro).  
OCR #6215 Patent

**Single cell protein arrays**  
A generic approach for multiplex detection of intracellular or surface molecular targets in single cells  
OCR #6413 Patent

**Co-measurement of RNA and DNA information in single cells**  
Reagents, methods and protocol  
OCR #6428 know-how  
Team: Rong Fan lab

**Vessel-on-a-chip**  
Inflammatory model of the microvessels of the lung, skin, eye and heart (bilayers) in a microfluidics flow assay format improves pre-clinical data.  
OCR #5980 Know-how

**Tunable Chemotaxis**  
Crystal templating method for tunable porosity and morphology to mimic basement membrane.  
OCR #5980 Know-how

**Wound healing dressing**
Amnion matrix polymer scaffold has extended shelf life and provides shear strength in the healing process leading to less contraction and better surface closure towards scar-free healing.
OCR #6517 Patent application
Team: Anjelica Gonzalez lab

**Biological applications of Carbon nanotubes**
Carbon nanotube based culture medium exhibits bacteriocidal properties and stimulates rapid expansion of cells including T-cells for adoptive therapy.
OCR #4699 Pat. 8,658,178
Team: Tarek Fahmy lab

**Heart-on-a-chip**
Improved biocompatible engineered heart tissue for cardiac disease management based on thin slices of decellularized heart tissue re-seeded with cells.
Team: Stuart Campbell lab

**High throughput cellular secretomics platform**
qELISA platform to quantitatively detect cellular secretions and secretory kinetics in a high throughput manner.
OCR #6598 Patent
Team: Andre Levchenko lab, Yale Center for Molecular Discovery

18. RESEARCH INSTRUMENTS

**Tuned-Oscillator Atomic Force Microscopy (TO-AFM)**
Simple upgrade for existing Atomic Force Microscopy instruments finally allows reliable atomic resolution imaging in a vacuum.
OCR 6466 Patent application
Team: Udo Schwartz lab, Yale CRISP

**Passive flow microfluidic device**
Stamp free single cell mechanical docking tool for long term analysis
OCR #6490 Patent application

**Microfluidics manufacturing bot**
A simple, fast and plasma-free method of fabricating pdms microstructures on glass by ‘pop slide patterning’, also optical tweezers coverslip patterning to 3 micron, high throughput or benchtop tool.
OCR #6489 Patent application
Team: Kathryn Miller-Jensen lab

**High Throughput Imaging Cytometry kit**
A minor modification to the standard slide allows a microarray scanner to perform cellomic assays and high throughput screening as effectively as a high throughput laser scanner.
OCR #6013 Know-how
Team: Rong Fan lab

**Mass Accurate mass spectrometry**
Next generation mass spectrometry software offers greater yield, faster turnaround and mobility. ‘Mass Accurate Databasing Identification and Confirmation’ (MADIC).
OCR #5969 Patent
Team: Yale KECK center

**Numerical Rocks**
Non-destructive MRI imaging of solids and MR image reconstruction algorithms.
OCR #5854 Software OCR #4773 Know-how
Team: Sean Barrett lab

**Uniform electrospray**
Corona assisted cone-jet mode of electrospray operation enables ejected fluid to be dispersed with highly uniform particle size.
OCR 745 Patent 5,873,523
Team: Alessandro Gomez lab

**Super Resolution STORM Microscope**
3D Fluorescence Nanoscopy Reveals Sub-20 nm Nanoarchitecture throughout Thick Cells
OCR #6735 Patent
Team: Joerg Bewersdorf lab, YEI team in formation

**Liquid Xenon Gamma ray imager**
High energy and angular resolution imager for imaging radiation sources. Two orders of magnitude improvement in Compton imaging for medical applications.
OCR #5186 Pat. 8,476,595
Team: Daniel McKinsey lab

**Interview Style Eye tracking system**
Camera gaze tracking system without headgear and screen free for 3D observation applications.
OCR #6647
Team: Yale Child Study Center

19. AG-BIO

**Genotyping-by-sequencing**
Flexible and scalable reduced representation genotyping-by-sequencing methods for population studies and trait mapping analysis.
OCR #6638

**Control of Plant sexuality and its reversal by chemical treatments**
Control of maize flower development for hybrid seed production, the plant does not have to be fully developed.
OCR #5025 13/142,819

**Male and Female Sterility lines used to make hybrids in GMO plants**

**The use of GMO plants for recovery of non-GMO hybrids from wide crosses**
OCR #6441 Patent 61/922,454
Team: Stephen Dellaporta lab, Transgenomics LLC

**Drought-stress resistant Biostimulant.**
Low cost organic drought tolerance foliant increases yield. Product combination with amino acid based green fertilizer SHOOTZ™ and compatible with most liquid fertigation systems.
Team: Graeme Berlyn, Greeley lab

Please contact Richard Andersson at Yale OCR for more information.

Richard L. Andersson
Licensing Associate
Tel: 203-436-3946
Mobile: 203-361-8376
richard.andersson@yale.edu

Office of Cooperative Research
433 Temple Street
New Haven, CT
www.yale.edu/ocr