2013 Program Report Card: University of Connecticut Stem Cell Institute (UCSCI)

Quality of Life Result: All Connecticut residents live free of disease and of the lingering effects of bodily injury.

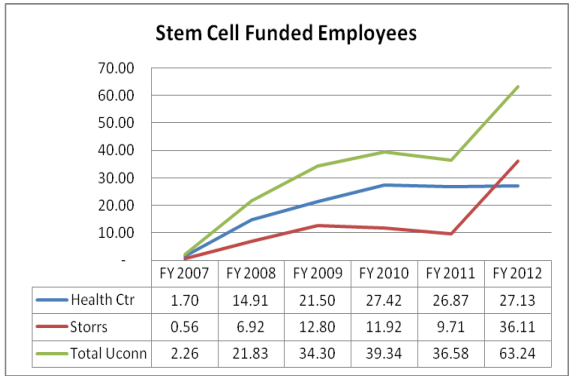
Contribution to the Result: Building on its existing research strengths, UCSCI (stem cell program) contributes to this end result because it seeks to develop medicine and therapies to cure and eradicate disease and repair injured tissues.

Program Expenditures	Federal Funding	Other Funding	Total Funding
Actual FY 12	$12,727,359	$6,787,825	$19,515,184
Estimated FY 13	$12,419,731	$2,150,588	$14,570,319

Partners: State of Connecticut, Department of Public Health, Connecticut Innovations, NIH, Wesleyan University, Yale University

How Much Did We Do?

Total Full Time Equivalents funded on Stem Cell Grants



	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Health Ctr	1.70	14.91	21.50	27.42	26.87	27.13
Storrs	0.56	6.92	12.80	11.92	9.71	36.11
Total Uconn	2.26	21.83	34.30	39.34	36.58	63.24

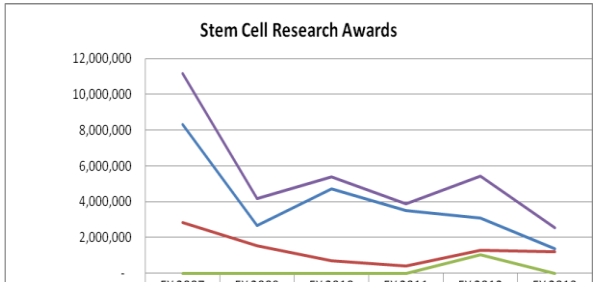
Story behind the baseline:

There are forty laboratories supported by this initiative with a wide range of research projects. A major component of Stem Cell research is housed in the new $52 million Cell and Genome Sciences building at the Uconn Health Center in Farmington, equipped with the latest technologies for studying stem cells and their genomes. This site brings together scientists working in stem cells into a cross-disciplinary and collaborative setting. The Cell and Genome Sciences Building consolidates equipment and staffing resources to coordinate research within and outside the University. Four companies are leasing space in the Technology Incubator Program: DRG (Doctors Research Group) - working to utilize stem cells in bone cement products, CheminPharma LLC - developing in-house, novel drug discovery projects in the cancer therapeutic area, Chondrogenics - in preclinical testing using chondrogenic cells derived from human embryonic stem cells to repair joint cartilage damaged by injury or aging, and Synbody Biotechnology – an early stage biotechnology company based on a powerful synthetic antibody

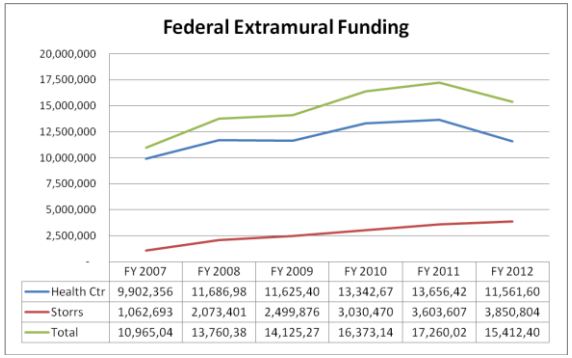
Trend: ▲

How Well Did We Do It?

The amount of awards received by the Health Center and Storrs.



	FY 2007	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Health Ctr-State	8,331,376	2,650,000	4,699,998	3,492,500	3,104,306	1,350,000
Storrs-State	2,819,548	1,534,712	699,956	399,839	1,290,499	1,200,000
Chondrogenics	-	-	-	-	1,037,991	-
Total	11,150,924	4,184,712	5,399,954	3,892,339	5,432,796	2,550,000



	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Health Ctr	9,902,356	11,686,98	11,625,40	13,342,67	13,656,42	11,561,60
Storrs	1,062,693	2,073,401	2,499,876	3,030,470	3,603,607	3,850,804
Total	10,965,04	13,760,38	14,125,27	16,373,14	17,260,02	15,412,40

Story behind the baseline:

For the first six rounds of competition for Connecticut stem cell funding, UCSCI investigators have successfully competed for $31.5 million of support. The majority of the UCSCI investigators received funding from the Connecticut State Stem Cell Fund. Total Stem Cell funding available through June 30, 2007 was $20M and $10M for each fiscal year through 2015 (currently awarded fiscal years 2008/09, 2009/10, 2010/11, 2011/12, and 2012/13). In FY 2012, 87 grants were submitted statewide for a total of $38.8M, of which UConn submitted 43 grants requesting $19.3M and received 6 awards for a total $2.55M. These awards were funding in FY 2013. In addition, Chondrogenics was awarded $1.29 million in FY 2012, of which $1 million is subcontracted back to UCHC. The combined total funding is $32.6 million in support.

The State's investment in the Stem Cell research has leveraged the Universities ability to attract and obtain extramural funding. The Extramural Funding graph represents funding from federal sources for principle investigators' in the Stem Cell Institute.

Trend: ◄►

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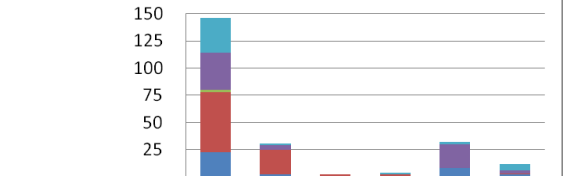
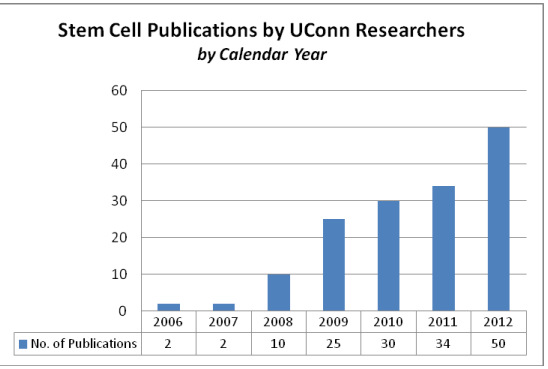
Is Anyone Better Off?

Stem Cell Lines Created by Fiscal Year and Publications by Calendar Year



	UCHC	Storrs	Wesleyen	Yale	Other States	Overseas
hiPSC Disease Lines	32	2	-	2	2	6
hiPSC Wild-type Lines	34	4	-	-	22	3
hESC Disease Lines	2	-	-	-	-	-
hESC WiCell Lines	55	23	2	2	-	1
hESC CT Lines	23	2	-	-	8	2

hiPSC = human induced pluripotent stem cells
hESC = human embryonic stem cells
hiPSC disease line = line derived from somatic cells donated by a patient with a disease caused by genetic mutation
hESC disease line = line derived from an early stage human embryo with disease-associated genetic mutation



	2006	2007	2008	2009	2010	2011	2012
No. of Publications	2	2	10	25	30	34	50

Story behind the baseline:

Cells in the body are differentiated to perform specific functions. Once formed these cells cannot change function to become a different cell type (i.e., a muscle cell cannot later become a bone cell). In contrast, a stem cell is an undifferentiated cell that has the potential to become any cell type present in the body. However, when the stem cell differentiates into a specific cell, a muscle cell for example, it can no longer differentiate into other cell types. Stem cell lines are specially created populations of undifferentiated cells that can continuously renew themselves and, given proper conditions, are able to become other cell types with specific functions like muscles, neurons, and blood cells. These functional cells can be implanted in the body to replace damaged or diseased muscles, neurons or blood cells. Created stem cell lines can be endlessly expanded, frozen, thawed, and distributed. So they can be available, theoretically, forever. The techniques to produce human embryonic stem cell lines from donated embryos are highly specialized and their derivation has been accomplished successfully in less than ten academic institutions in the United States, including the Stem Cell Core at the University of Connecticut. The National Institutes of Health Embryonic Stem Cell Registry now banks 198 human embryonic stem cell lines that qualify for federal funding. Four of these were deposited by the University of Connecticut.

The University of Connecticut Stem Cell Core created the four lines in FY2008 and FY2009 which are available to researchers across the United States and throughout the world. As of June 2012, total distributed is 227.

The success of research is primarily measured by the number and impact of publications. The value of publications is that it represents the avenue to communicate research results to the scientific and general public. UConn researchers have over 150 publications including (but not limited to) journal articles, book chapters, public media and presentations. Publications are the most important criteria for evaluating merits in regards to scientific awards for funding opportunities.

Trend: ▲

Proposed Actions to Turn the Curve:

Maintain or increase number of employees funded by Stem Cell Research funds which in turn will save jobs in the state of Connecticut or create more jobs.

Increase Federal funding now that Pres. Obama removed the restrictions set by Pres. Bush on federal funding for research on human embryonic stem cell lines derived after Aug 2001. However, all the lines must be first registered at the NIH if the informed consent form for the embryo donation to derive the lines ethically meets requirements set by the NIH.

Currently most stem cell lines have been derived and cultured in contact with animal products. We need to derive new stem cell lines under animal-free conditions, so they are biologically safe when used to treat patients. This is a goal of the stem cell core to create these lines.

Data Development Agenda:

Many stem cell labs are currently working on disease-associated iPS cells derived from patients.

Recently published articles in medical literature cite progress toward treatment of patients with serious health issues. Promising results are in areas including cancer, multiple sclerosis, and severe periodontal diseases. We continue to explore ways to report how stem cell lines contribute to new discoveries and cures.

The Stem Cell Program, with increased funding, will be an important part of the successful implementation of our collaboration with researchers at Jackson Labs and within Bioscience CT.