

Hope for preemies as artificial womb helps tiny lambs grow

WASHINGTON — Researchers are creating an artificial womb to improve care for extremely premature babies — and remarkable animal testing suggests the first-of-its-kind watery incubation so closely mimics mom that it just might work.

Today, premature infants weighing as little as a pound are hooked to ventilators and other machines inside incubators. Children’s Hospital of Philadelphia is aiming for a gentler solution, to give the tiniest preemies a few more weeks cocooned in a womb-like environment — treating them more like fetuses than newborns in hopes of giving them a better chance of healthy survival.

The researchers created a fluid-filled transparent container to simulate how fetuses float in amniotic fluid inside mom’s uterus, and attached it to a mechanical placenta that keeps blood

oxygenated.

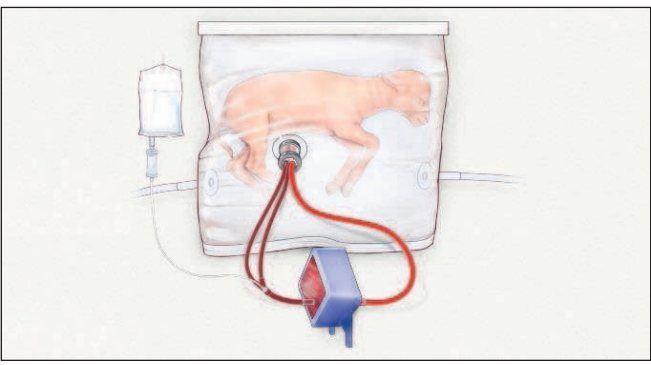
In early-stage animal testing, extremely premature lambs grew, apparently normally, inside the system for three to four weeks, the team reported Tuesday.

“We start with a tiny fetus that is pretty inert and spends most of its time sleeping. Over four weeks we see that fetus open its eyes, grow wool, breathe, swim,” said Dr. Emily Partridge, a CHOP research fellow and first author of the study published in Nature Communications .

“It’s hard to describe actually how uniquely awe-inspiring it is to see,” she added in an interview.

Human testing still is three to five years away, although the team already is in discussions with the Food and Drug Administration.

“We’re trying to extend normal gestation,” said Dr. Alan Flake, a fetal surgeon at CHOP who is leading the



Children’s Hospital of Philadelphia via AP
In this drawing provided by the Children’s Hospital of Philadelphia, an illustration of a fluid-filled incubation system that mimics a mother’s womb, in hopes of one day improving survival of extremely premature babies.

project and considers it a temporary bridge between the mother’s womb and the outside world.

Increasingly hospitals attempt to save the most critically premature infants, those born before 26 weeks gestation and even those right at the limits of viability — 22 to 23 weeks. Extreme prematurity is a leading cause

of infant mortality, and those who do survive frequently have serious disabilities such as cerebral palsy.

The idea of treating preemies in fluid-filled incubators may sound strange, but physiologically it makes sense, said Dr. Catherine Spong, a fetal medicine specialist at the National Institutes of Health.

One of the biggest risks for very young preemies is that their lungs aren’t ready to breathe air, she explained. Before birth, amniotic fluid flows into their lungs, bringing growth factors crucial for proper lung development. When they’re born too soon, doctors hook preemies to ventilators to keep them alive but risk lifelong lung damage.

Flake’s goal is for the womb-like system to support the very youngest preemies just for a few weeks, until their organs are mature enough to better handle regular hospital care like older preemies who have less risk of death or disability.

The device is simpler than previous attempts at creating an artificial womb, which haven’t yet panned out.

How the “Biobag” system works:

—The premature lambs were delivered by C-section

and immediately placed into a temperature-controlled bag filled with a substitute for amniotic fluid that they swallow and take into their lungs.

“We make gallons of this stuff a day,” said fetal physiologist Marcus Davey. It’s currently an electrolyte solution; he’s working to add other factors to make it more like real amniotic fluid.

—Then the researchers attached the umbilical cord to a machine that exchanges carbon dioxide in blood with oxygen, like a placenta normally does.

—The lamb’s heart circulates the blood, without the need for any other pump.

The researchers tested five lambs whose biological age was equivalent to 23-week human preemies, and three more a bit older. All appeared to grow normally, with blood pressure and other key health measures stable.



AP Photo/Michael Conroy
In this March 13 photo, students and teachers gather for an all-school meeting called “circle” at Hope Academy in Indianapolis.

Overcoming opioids: Special schools help teens stay clean

INDIANAPOLIS (AP) — When Logan Snyder got hooked on pills after a prescription to treat pain from a kidney stone, she joined the millions already swept up in the nation’s grim wave of addiction to opioid painkillers.

She was just 14.

Youth is a drawback when it comes to kicking drugs. Only half of U.S. treatment centers accept teenagers and even fewer offer teen-focused groups or programs. After treatment, adolescents find little structured support. They’re outnumbered by adults at self-help meetings. Sober youth drop-in centers are rare. Returning to school means resisting offers to get high with old friends.

But Snyder is lucky: Her slide ended when her father got her into a residential drug treatment program. Now 17 and clean, she credits her continued success to Hope Academy in Indianapolis, a tuition-free recovery school where she’s enrolled as a junior.

painkillers and heroin. Most, like Snyder, have been through residential treatment, some more than once.

Others, like 17-year-old Aiden Thompson, arrive with no treatment after a crisis.

“I was really pissed off because I didn’t want to be here,” says Thompson, who came to Hope last year after his mom discovered his vodka and pill stash. “Everything they said, I was like: ‘That can’t be true. No. No way.’”

A week later, though, he found himself talking in group meetings.

Now, he said, “I don’t even want to think about where I would be” without the school.

Teens like Snyder and Thompson can change in these settings, even after years of drug abuse, in part because social acceptance is a fundamental need for people their age.

The sway of positive peer pressure — what students at Hope call “the community” — is quiet, almost intangible. It’s as simple as two teens passing in the hall: “You all right?” says one boy. The other nods, “Yeah, I’m all right.”

A student council plans events like coffee-and-music mornings. To join the council, a student must have 30 days of sobriety.

Random drug tests keep it real. Failing a urine test prompts a meeting with recovery coach Brad Trolson, who employs a technique called motivational interviewing, using open-ended questions and reflective listening to encourage students to think for themselves.

“They’re not used to anyone saying, ‘What do you think you should do next?’” Trolson says.

It’s a daily fight, he says. Many have addicted parents or histories of abuse or neglect, key risk factors for addiction.

“Their wounds will start to heal and they’ll come open again,” he says. “You end up addressing those wounds over and over again.”

Thompson, who relapsed over winter break, says he’s learning to focus on one day of recovery at a time. “I’m clean for today and that’s all that matters,” he says. “I don’t want to put all this weight on my shoulders to feel like I have to stay clean forever. I can just take it a day at a time and not be freaked out by it.”

Wednesday Morning											
	STATION		6 AM	6:30	7 AM	7:30	8 AM	8:30	9 AM	9:30	
FOX	(11) KFFX	11	AgDay	Hot/ Cleve.	Good Day				Paid	Brain	Steve Harvey
	KPTV	3	Good Day Oregon at 6		Good Day Oregon				Good Day		The 700 Club
CBS	(19) KEPR	2	News	News	CBS This Morning (N)				Harry (N)		The Price Is Right
	KOIN	19	KOIN 6 News at 6 a.m.		CBS This Morning (N)				Let's Make a Deal		The Price Is Right
NBC	(25) KNDU	6	Wake Up Northwest		Today Show Joy Bauer, Dr. Mehmet Oz (N)				Today Show II (N)		Today Show III (N)
	KGW	8	KGW News at Sunrise		Today Show Joy Bauer, Dr. Mehmet Oz (N)				Today Show II (N)		Today Show III (N)
ABC	(42) KVEW	4	Northwest	Northwest	Good Morning America (N)				Live! With Kelly (N)		The View
	KATU	5	KATU News Morning		Good Morning America (N)				AM Northwest		The View
PBS	(31) KTNW		Stretch	W.L.Yoga	SplashB.	Jet Go!	Nature Cat	C.George	D.Tiger	Thomas	Sesame St.
	(59) OPB	13	Power	Jet Go!	Nature Cat	C.George	D.Tiger	D.Tiger	SplashB.	Sesame St.	DinoTrain

AFTERNOON											
	STATION		12 PM	12:30	1 PM	1:30	2 PM	2:30	3 PM	3:30	
FOX	(11) KFFX	11	Paid	Pat. Court	Divorce	Divorce	Judge Mathis		The People's Court		2½Men
	KPTV	3	12 O'Clock News		Wendy Williams		The Dr. Oz Show		TMZ Live!		Judge Judy
CBS	(19) KEPR	2	NameG.	Bold & B.	The Talk (N)		Let's Make a Deal		Dr. Phil (N)		Judge Judy
	KOIN	19	News	Bold & B.	The Talk (N)		The Doctors (N)		Dr. Phil (N)		KOIN 6 News at 4 p.m.
NBC	(25) KNDU	6	TMZ	Paid	Days of Our Lives		Hot Bench	Hot Bench	Wendy Williams		Ellen DeGeneres (N)
	KGW	8	KGW New	Paid	Days of Our Lives		TDJakes	"Perfectionist"	Ellen DeGeneres (N)		KGW News
ABC	(42) KVEW	4	The Chew		General Hospital		The Doctors (N)		Rachael Ray (N)		Minute
	KATU	5	The Chew		General Hospital		Harry (N)		Afternoon Live		KATU News @ 4
PBS	(31) KTNW		Charlie Rose		Meals	F&Porter	Stretch	C.George	Speaks	WordGirl	Arthur
	(59) OPB	13	Paint	One Plate	Charlie Rose (N)		Nature Cat	Thomas	Cat/ Hat	Jet Go!	Speaks

EVENING											
	STATION		6 PM	6:30	7 PM	7:30	8 PM	8:30	9 PM	9:30	
FOX	(11) KFFX	11	Modern Fam "Grill, Interrupt-ed"	Modern Family "Knock 'Em Down"	2 Broke Girls "And the Candy Manwich"	2 Broke Girls	Shots Fired "Hour 6: The Fire This Time" (N)		Empire "Love Is a Smoke" (N)		FOX News First at Ten
	KPTV	3	6 O'Clock News		Family Feud	Family Feud	Shots Fired "Hour 6: The Fire This Time" (N)		Empire "Love Is a Smoke" (N)		10 O'Clock News
CBS	(19) KEPR	2	Action News at 6:00 p.m.	Inside Edition	The Big Bang Theory	The Simpsons "The Kids Are All Fight"	Survivor: Game Changers "A Line Drawn in Concrete" (N)		Criminal Minds "Unforgettable" (N)		Criminal Minds: Beyond Borders "Blowback" (N)
	KOIN	19	KOIN Local 6 at 6	Evening News	Extra	Ent. Tonight	Survivor "A Line Drawn in Concrete" (N)		Criminal Minds "Unforgettable" (N)		Crim. Minds: Borders "Blowback" (N)
NBC	(25) KNDU	6	Local News	Family Feud	Wheel of Fortune	Jeopardy!	Blindspot "Regard a Mere Mad Rager" (N)		Law & Order: Special Victims Unit "The Newsroom" (N)		Chicago P.D. "Grasping for Salvation" (N)
	KGW	8	KGW News at 6:00 p.m.		Live at 7	Inside Edition	Blindspot "Regard a Mere Mad Rager" (N)		Law & Order: S.V.U. "The Newsroom" (N)		Chicago "Grasping for Salvation" (N)
ABC	(42) KVEW	4	Extra	Local News at 6:30 a.m.	Entertainment Tonight	The Insider	Goldberg "Fonzie Scheme" (N)		Speechless "R-U-N--RUNAWAY" (N)		Black-ish "Sister, Sister" (N)
	KATU	5	KATU News at 6		Jeopardy!	Wheel of Fortune	Goldberg (N)		Speechless (N)		Black-ish (N)
PBS	(31) KTNW		PBS NewsHour		BBC World News	WealthT-rack	Nature "Forest of the Lynx" (N)		Nova (N)		Wild Weather (N)
	(59) OPB	13	Journeys in Japan	Business (N)	PBS NewsHour		Nature "Forest of the Lynx" (N)		Nova (N)		Wild Weather (N)

	STATION	PEN	6 PM	6:30	7 PM	7:30	8 PM	8:30	9 PM	9:30	10 PM	10:30	11 PM	11:30
FOX	A&E	52	The First 48 "Silent Rage"/ Tainted Love"		Storage Wars	Storage Wars	Storage Wars	Storage Wars	Storage Wars (N)	Storage Wars (N)	Exterminator (N)	Exterminator (N)	:05 Storage W.	:35 Storage W.
	AMC	60	☛ ★★★ Sherlock Holmes: A Game of Shadows ('11, Act) Jude Law, Robert Downey Jr..				☛ ★★★ Lethal Weapon	An unstable police officer is partnered with a veteran detective to battle drug dealers.			☛ ★★★ Lethal Weapon 2 ('89, Act) Danny Glover, Mel Gibson.			
ANPL	24		Tanked!		Tanked!		Tanked!		Tanked: Sea-lebrity "Top Rope Tanks" (N)		Tanked!			
	CMT	43	☛ ★★ Secretariat ('10, Fam) Diane Lane.				☛ ★★ Secretariat ('10, Family) Scott Glenn, James Cromwell, Diane Lane.				Broken Skull Challen			
CNBC	72		Shark Tank		Rich (N)	Shark Tank		Shark Tank		Shark Tank		Super Rich	Paid	Paid
	CNN	68	The Lead		CNN Tonight		CNN Tonight		Anderson Cooper 360		The Lead		CNN Tonight	
DISC	51		The Last Alaskans		The Last Alaskans		The Last Alaskans		The Last Alaskans (N)		Naked and Afraid XL		Bush "A Big Gamble"	
	DISN	26	Tangled Bizaard.		Underc.	Good Luck	StuckMid	Andi Mack	Liv Maddie	Liv Maddie	Bunk'd	Bunk'd	Jessie	Jessie
ESPN	33		MLB Baseball N.Y. Yankees vs Boston (L)		Baseball Tonight (L)		SportsCenter		SportsCenter		SportsCenter		SportsCenter	
	ESPN2	34	SportsC. Rookie		Rookie	Rookie	NFL Live		Baseball Tonight (L)		J & J	SportsC.	"NFL Nation Mock Draft"	
FNC	66		TuckerCarlsonTonight		Hannity		The O'Reilly Factor		TuckerCarlsonTonight		Hannity		The First 100 Days	
	FOOD	61	Cooks vs. Cons		Cooks vs. Cons		Cooks vs. Cons		Cooks vs. Cons (N)		Cooks vs. Cons		Cooks vs. Cons	
FREE	32		Middle	☛ ★★★ Coming to America ('88, Com) Eddie Murphy.			☛ ★★ Nacho Libre ('06, Com) Jack Black.						The 700 Club	
	FX	65	☛ Taken 3 ('14, Act) Liam Neeson.	☛ ★★★★★ Captain America: The First Avenger Chris Evans.			Fargo (N)				Fargo (N)		Fargo	
GOLF	88		G.Rounds "The Players: 2007" (N)		EPGA Golf China Open (L)		EPGA Golf China Open				EPGA Golf China Open		EPGA Golf	
	GSN	76	Fam. Feud	Fam. Feud	Hwood Game Night		Cash Cab	Cash Cab	Fam. Feud	Fam. Feud	Fam. Feud	Fam. Feud	Baggage	Baggage
HALL	87		Last Man	Last Man	Last Man	Last Man	Last Man	Last Man	Middle	Middle	Middle	Middle	G. Girls	G. Girls
	HGTV	62	Buying and Selling		Buying and Selling		Property Brothers		Buying and Selling (N)		H.Hunt (N)	House (N)	Flipping Virgins (N)	
HIST	50		American Pickers "Museum Man"		American Pickers "The Maineiacs"		Amer. Pickers "Rock and a Hard Place"		American Pickers "Hard Bargains" (N)		:05 American Pickers "My Sweet Ford"		:05 American Pickers "Creepiest Collections"	
	LIFE	29	Little Women: Atlanta		Little Women: Atlanta		Little Women ATL (N)		LW Atlanta (N)		Little W. Dallas (N)		Little W	:05 Little W
NICK	27		H.Danger	H.Danger	Thunder	Thunder	Nicky	GSshakers	Full House	Full House	Full House	Full House	Friends	Friends 1/2
	ROOT	37	MLB Baseball Seattle vs Detroit (L)		Post-game (L)		MLB Baseball Seattle Mariners at Detroit Tigers Site: Comerica Park --				Mariners Post-game		UFC UFC 191	
SPIKE	42		☛ ★★ Varsity Blues ('99, Spt) Jon Voight, James Van Der Beek.		☛ ★★★★★ The Blind Side ('09, Spt) Sandra Bullock. An affluent family takes in a homeless teenager who becomes a star football player.		☛ ★★★★★ The Matrix ('99, Act) Laurence Fishburne, Keanu Reeves.							
	SYFY	67	Movie	☛ ★★★★★ The Goonies ('85, Adv) Sean Astin.			☛ ★★★★★ The Matrix ('99, Act) Laurence Fishburne, Keanu Reeves.							
TBS	59		Seinf. "The Cartoon"	Seinf. "The Strongbow"	Seinf. "The Wizard"	Seinf. "The Burning"	Big Bang Theory	Big Bang Theory	Big Bang Theory	Big Bang Theory	Big Bang Theory	Full Frontal	Conan Dennis Quaid, Nikki Lane (N)	
	TCM	56	☛ ★★★★★ Bound for Glory ('76, Bio) Ronny Cox, David Carradine.		:45 ☛ ★★★★★ America, America Lou Antonio. A young immigrant's starry-eyed impressions of America are soon compromised by reality.								:45 ☛ ★★★★★ In the Heat of the Night ('67, Cri) Sidney Poitier.	
TLC	49		My 600-lb Life		My 600-lb Life		My 600-lb Life "Teretha and Chad"				:10 This is Life Live (L)		:10 My 600-lb Life	
	TNT	57	Basket.	NBA Basketball Playoffs			Inside the NBA				NBA Basketball Playoffs			
UNI	21		Includio	Noticiero	La rosa de Guadalupe		La reina de la cancion		Vino el amor		La piloto		Impacto	Noticie.
	USA	58	NHL Hockey Stanley Cup Playoffs (L)				NCIS "Light Sleeper"		NCIS "Head Case"		NCIS "Family Secret"		NCIS: Los Angeles	
WE	118		☛ ★★ The Wedding Planner		☛ ★★ The Wedding Planner		☛ ★★ The Wedding Planner ('01, Rom) Jennifer Lopez.				Dr. Miami		Dr. Miami	
	WGN		☛ ★★ U.S. Marshals		Underground (N)		Underground		Underground		Underground		Rules	Rules
STZ ENC	644		☛ ★★ The X-Files David Duchovny.				☛ ★★ Spaceballs Bill Pullman.		:35 ☛ ★★ A League of Their Own				Movie	
	HBO	518	☛ Ride Along 2 Ice Cube.		Vice News		☛ ★★★★★ Suicide Squad ('16, Act) Will Smith.		:05 The Leftovers		:05 The Leftovers		:05 The Leftovers	
HBO2	520		:55 Veep	:25 ☛ The Immortal Life of Henri...		Last Week	:35 Silicon	:05 Canelo	:35 Real Sports		:35 Rock and a Hard Place			
	HBO3	521	Bill Maher	☛ Straight Outta Compton ('15, True)	O'Shea Jackson Jr..		☛ Absolutely Fabulous: The Movie		:35 ☛ How to Be Single					
MAX	549		:10 ☛ ★★ Species ('95, Sci-Fi) Ben Kingsley.		☛ The Purge: Election Year		:50 ☛ ★★ Death Race Jason Statham.						Movie	
	SHOW	578	☛ ★★ Lincoln ('12, Bio) Daniel Day-Lewis.		☛ Burn Mother! cker, Burn!		☛ ★★ Enemy at the Gates Jude Law.						Movie	
STARZ	621		☛ ★★ Seven Pounds	:15 The White Princess		:15 ☛ ★★ Made of Honor Patrick Dempsey.		The White Princess					☛ Concussion	

NIGHT OWL											
	STATION		12 AM	12:30	1 AM	1:30	2 AM	2:30	3 AM	3:30	
FOX	(11) KFFX	11	:05 Friends	:35 Hot In	:05 CR TV						CR TV
	KPTV	3	2 Broke G.	TMZ	Dish	Queens	Raising	Celeb	Paid	Paid	Minute
CBS	(19) KEPR	2	Colbert	:35 James Corden (N)	:35 Paid		:05 CBS Overnight News				News
	KOIN	19	Colbert	:35 James Corden (N)	:35 Insider		:05 CBS Overnight News				News
NBC	(25) KNDU	6	Tonight	:35 Seth Meyers (N)	:35 C. Daly		:05 Today Show	Mad Money			News
	KGW	8	Tonight	:35 Seth Meyers (N)	:35 C. Daly		:05 Steve Harvey	Mad Money			News
ABC	(42) KVEW	4	J. Kimmel	:35 Nightl.	:05 ABC World News Now						News
	KATU	5	J. Kimmel	:35 Nightl.	:05 Paid		:05 ABC World News Now				News
PBS	(31) KTNW		News	Japan	Nature		Nova		Wild Weather		American Experience
	(59) OPB	13	PBS NewsHour		The White House: Inside Story				Frontline "The Fish on My Plate"		Film