

**KING-SIZE
SPECIAL!**

**20
BIG
PAGES**

ANNUAL

FREE!

2019

ACTION TECH TRANSFER

PRESENTS

TALES OF THE... Unemmed

TECH TRANSFER
AUTHORITY FOR
UNIVERSITY OF
Nebraska
UNMC & UNO

INNOVATION AWARDS
LIKE NEVER BEFORE

WORLD'S BEST TECH
TRANSFER PODCAST...
EVER!

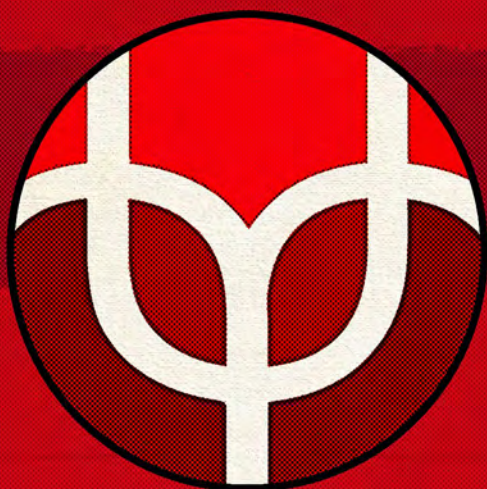
**INNOVATION
OVERGROUND!**

MAKING THE MIDWEST
A MUST-SEE FOR
DRUG DEVELOPMENT

Flyover this!



Mr. West Drug



Unemed



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CONFERENCE OPENS DOORS



LINEMED LAUNCHES PODCAST

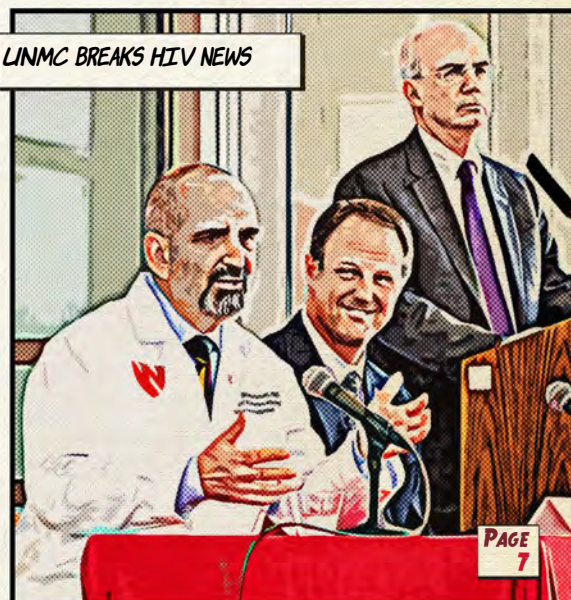


2018 INNOVATION AWARDS

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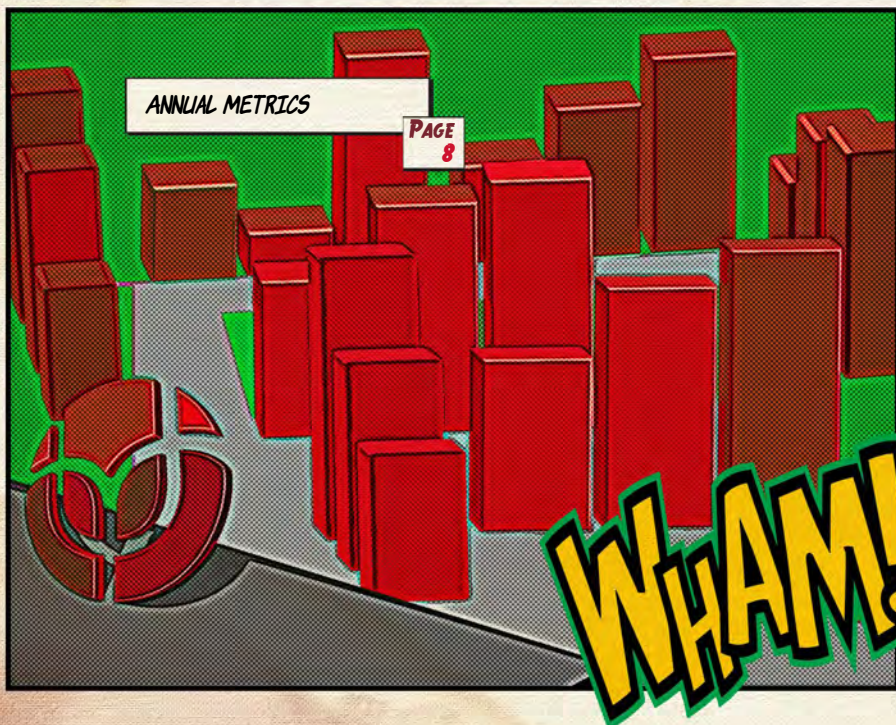


LINMC BREAKS HIV NEWS

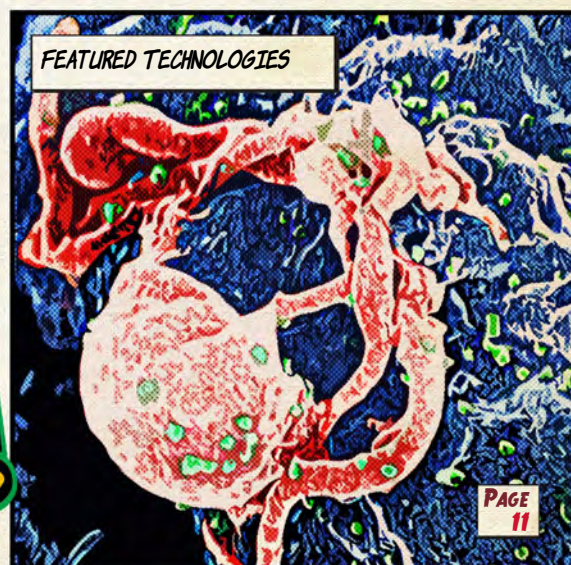


ANNUAL METRICS

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FEATURED TECHNOLOGIES



LINEMED IS THE TECHNOLOGY TRANSFER & COMMERCIALIZATION OFFICE FOR THE UNIVERSITY OF NEBRASKA MEDICAL CENTER & THE UNIVERSITY OF NEBRASKA AT OMAHA

THE UNIVERSITY OF NEBRASKA DOES NOT DISCRIMINATE BASED ON RACE, COLOR, ETHNICITY, NATIONAL ORIGIN, SEX, PREGNANCY, SEXUAL ORIENTATION, GENDER IDENTITY, RELIGION, DISABILITY, AGE, GENETIC INFORMATION, VETERAN STATUS, MARITAL STATUS, AND/OR POLITICAL AFFILIATION IN ITS PROGRAMS, ACTIVITIES, OR EMPLOYMENT.

LETTER FROM THE PRESIDENT

THE SUPERPOWER OF ACADEMIC INNOVATION...

Michael Dixon

MICHAEL DIXON, PH.D.
PRESIDENT AND CEO

LOOKING BACK ON THE PAST YEAR, I CAN PROUDLY SAY WE'VE DONE MORE TO IMPROVE OUR UTILITY BELT OF TECH TRANSFER TOOLS THAN ANY OTHER TIME SINCE I'VE BEEN AT UNeMed.

I'VE ALWAYS BEEN PROUD OF THE WAY OUR TEAM SEEKS (AND USUALLY FINDS) INNOVATIVE WAYS TO HELP PROMOTE THE TECHNOLOGIES UNMC AND UNO RESEARCHERS BRING THROUGH OUR DOOR. BUT THIS LAST YEAR WAS SOMETHING DIFFERENT. IT WAS A WHOLE NEW LEVEL.

LAST FALL, WE PRODUCED FOR THE FIRST TIME THE MIDWEST DRUG DEVELOPMENT CONFERENCE, WHICH WAS A RESOUNDING SUCCESS. I CAN'T TELL YOU HOW MANY RAVE REVIEWS WE RECEIVED. IT WAS A FAIRLY SIMPLE IDEA: BRING SEVERAL OF THE BEST MIDWESTERN UNIVERSITIES TOGETHER IN OMAHA FOR TWO DAYS AND COMBINE RESOURCES TO ATTRACT THE ATTENTION OF GLOBAL PHARMA, BIOTECH, AND VENTURE CAPITALISTS.

WE GAINED MORE THAN A DOZEN NEW CONTACTS AND OPPORTUNITIES FROM THAT CONFERENCE, NOT TO MENTION THE SUPPORT FROM SHARPHUB (SUSTAINABLE HEARTLAND ACCELERATOR REGIONAL PARTNERSHIP) GRANT FUNDING. SHARPHUB IS FUNDED BY A SMALL BUSINESS TECHNOLOGY TRANSFER GRANT FROM THE NATIONAL INSTITUTES OF HEALTH, AND AIMS TO PROVIDE ENTREPRENEURIAL RESOURCES TO RESEARCHERS IN SO-CALLED FLYOVER STATES LIKE NEBRASKA, KANSAS, OKLAHOMA AND THE DAKOTAS.

SHARPHUB WILL PROVIDE THE KIND OF SUPPORT THAT UNMC AND UNO STARTUPS MIGHT NEED TO BE MORE COMPETITIVE FOR VENTURE OR SBIR FUNDING, OR IT MAY HELP PROVIDE SUPPORT FOR ADDITIONAL DEVELOPMENT OF NEW TECHNOLOGY. EARLY SUPPORT LIKE THIS COULD MAKE ALL THE DIFFERENCE BETWEEN OBSCURITY AND FDA APPROVAL.

COMBINING SHARPHUB WITH ANOTHER NEW RESOURCE, UNeTech, COULD PROVE TO BE A NEW SUPER POWER FOR US. AS UNeTech—THE UNIVERSITY'S OMAHA-BASED BIOTECH STARTUP ACCELERATOR—GROWS, IT WILL BE YET ANOTHER WAY TO START AND BUILD COMPANIES THAT WILL DEVELOP OUR NEW TECHNOLOGIES PAST VALLEY OF DEATH.

UNeTech WILL BE THE CORNERSTONE FOR BIOMEDICAL STARTUPS IN OUR REGION. NEW STARTUPS CAN GO THERE TO FIND ALL THE SUPPORT THEY NEED, WHETHER IT'S AFFORDABLE PHYSICAL SPACE OR EXPERTISE OR MENTORING OR OTHER RESOURCES. UNeTech CAN BE A PLACE WHERE BIOMEDICAL ENTREPRENEURS CAN MOVE PAST THEIR ORIGIN STORIES TO DEVELOP PRODUCTS THAT HAVE A NATIONAL AND GLOBAL IMPACT ON HUMAN HEALTH.

I EXPECT THESE NEW TOOLS WILL LEAD TO MORE SUCCESS STORIES LIKE VIRTUAL INCISION, WHICH RECENTLY RAISED \$18 MILLION IN ADDITIONAL FUNDING. VIRTUAL INCISION IS ONE OF OUR MOST SUCCESSFUL STARTUPS, AND IS REDEFINING MINIMALLY INVASIVE SURGERY TO SUCH AN EXTENT THAT IT COULD CREATE AN ENTIRELY NEW INDUSTRY.

VIRTUAL INCISION'S ROAD TO THIS POINT BEGAN MORE THAN A DECADE AGO, AND I CAN'T HELP BUT WONDER WHERE THEY WOULD BE TODAY IF THEY HAD ACCESS TO THE RESOURCES WE HAVE NOW.

I CAN ONLY IMAGINE.

BUT I FEEL FAIRLY CERTAIN THAT BIOTECH INNOVATIONS AND STARTUPS THAT COME THROUGH OUR DOORS TODAY HAVE AN OPPORTUNITY FOR SUCCESS LIKE NEVER BEFORE. AND THEIR SUCCESS IS TO ALL OUR BENEFIT, NOT JUST HERE, BUT EVERYWHERE.

DRUG DEVELOPMENT CONFERENCE A HUGE SUCCESS!

Thirteen major Midwest medical research institutions with their best and brightest technologies **IN ONE PLACE!**

Participating Universities:
 KANSAS STATE UNIVERSITY
 OHIO STATE UNIVERSITY
 PURDUE UNIVERSITY
 UNIVERSITY OF IOWA
 UNIVERSITY OF KANSAS
 UNIVERSITY OF MISSOURI
 UNIVERSITY OF NEBRASKA
 UNIVERSITY OF OKLAHOMA
 UNIVERSITY OF SOUTH DAKOTA
 WASHINGTON UNIVERSITY IN ST. LOUIS

MidWest Drug Development Conference

Oct. 1-2, 2018 >> Omaha

Statistics:
 \$5.74 BILLION IN RESEARCH
 1,937 NEW INVENTIONS
 563 LICENSING AGREEMENTS
 444 U.S. PATENTS
 43 NEW PRODUCTS
 85 STARTUPS FORMED
 8 BLOCKBUSTERS

Fly over this!

ON OCTOBER 1-2, 2018, UNEMED HOSTED ITS FIRST-EVER MIDWEST DRUG DEVELOPMENT CONFERENCE, AND IT WAS AN UNQUALIFIED SUCCESS.

"NO QUESTION ABOUT IT," SAID MICHAEL DIXON, CEO AND PRESIDENT AT UNEMED, THE EVENT'S PRIMARY HOST. "TAKING A SWING AT SOMETHING MAJOR LIKE THIS IS MORE THAN A LITTLE NERVE-WRACKING. WILL ANYONE SHOW UP? ARE WE WASTING OUR TIME? BUT THIS WAS A HOME RUN, NO DOUBT—AND NOT JUST FOR US."

DIXON ADDED THAT HE RECEIVED POSITIVE FEEDBACK AT EVERY TURN DURING THE CONFERENCE, WHICH WAS HELD ON OCTOBER 1-2 AT THE CAPITAL DISTRICT MARRIOTT IN DOWNTOWN OMAHA. EVEN WEEKS LATER, AT OTHER NATIONAL AND REGIONAL EVENTS, DIXON REPORTED FEEDBACK FROM OTHER UNIVERSITY AND INDUSTRY REPRESENTATIVES.

"PEOPLE KEPT ASKING ME HOW THEY COULD HELP NEXT YEAR," HE SAID, "OR HOW TO BE MORE INVOLVED. A LOT OF THEM WERE JUST REALLY IMPRESSED WITH THE EVENT AND GOT A TON OF VALUE OUT OF IT."

THE CONFERENCE PULLED TOGETHER MORE THAN A DOZEN MIDWESTERN UNIVERSITIES, WHICH REPRESENTED MORE THAN \$5.7 BILLION IN RESEARCH EXPENDITURES AND 1,937 NEW INVENTIONS IN 2016, ACCORDING TO THE MOST RECENT DATA AVAILABLE. THOSE 13 UNIVERSITIES PRESENTED MORE THAN 40 NEW, DRUG-RELATED TECHNOLOGIES IN SHORT, 10-MINUTE PRESENTATIONS. THE AUDIENCE WAS A COLLECTION OF PHARMACEUTICAL EXECUTIVES, VENTURE CAPITAL GROUPS AND OTHER POTENTIAL PARTNERS WHO COULD HELP FURTHER DEVELOP THOSE NEW TECHNOLOGIES.

THE PARTICIPATING UNIVERSITIES INCLUDED COLORADO STATE, IOWA, IOWA STATE, KANSAS, KANSAS STATE, MISSOURI, NEBRASKA, OHIO STATE, OKLAHOMA, PURDUE, SOUTH DAKOTA, AND WASHINGTON UNIVERSITY IN ST. LOUIS.

ALL TOLD, 113 PEOPLE ATTENDED THE TWO-DAY CONFERENCE, INCLUDING REPRESENTATIVES FROM 24 COMPANIES AND INVESTMENT GROUPS. ABOUT 146 ONE-ON-ONE PARTNERING MEETINGS WERE SCHEDULED, INCLUDING 15 WITH UNMC AND UNO REPRESENTATIVES ALONE.

A POST-EVENT SURVEY YIELDED GLOWING REVIEWS.

ONE INDUSTRY REPRESENTATIVE RATED IT A "10 OUT OF 10" AND ANOTHER SAID IT WAS A "[6]REAT COLLECTION OF UNIVERSITIES, ENABLING ACCESS TO A VAST GEOGRAPHY."

ANOTHER RESPONDENT COMMENTED:

"THIS EVENT WAS A GREAT MIX OF OPPORTUNITIES TO MEET INDUSTRY FOLKS, BUT ALSO TO MEET ACADEMIC FOLKS. I ACTUALLY MET AN INDIVIDUAL THAT MAY BE INTERESTED IN FORMING AN ACADEMIC COLLABORATION. ALSO HAVING VC FIRMS, ACCELERATORS/INCUBATORS PRESENT ALLOWED FOR A UNIQUE NETWORKING OPPORTUNITY FOR ACADEMIA, INDUSTRY, AND ENTREPRENEURSHIP."

FOR UNEMED, THE CONFERENCE YIELDED 27 NEW OPPORTUNITIES FOR UNMC TECHNOLOGIES, INCLUDING 33 NEW CONTACTS AND 13 NEW COMPANY AND INVESTMENT GROUPS.

"AN OPPORTUNITY IS ANYTIME WE HAVE A CONVERSATION WITH AN INTERESTED THIRD-PARTY THAT WANTS TO LEARN MORE ABOUT A TECHNOLOGY FOR POTENTIAL INVESTMENT," SAID MATT BOEHM, UNEMED'S DIRECTOR OF LICENSING AND PRINCIPAL PLANNER OF THE EVENT. "THOSE NEW OPPORTUNITIES ARE CONVERSATIONS THAT CAN LEAD TO AGREEMENTS AND PARTNERSHIPS THAT HELP THESE EARLY-STAGE INNOVATIONS BECOME NEW TREATMENTS ONE DAY."

THE MIDWEST DRUG DEVELOPMENT CONFERENCE WAS BORN FROM THE COMBINATION OF TWO EVENTS UNEMED HAS HOSTED IN PRIOR YEARS: UNMC TECHNOLOGY DEMO DAY AND THE INDUSTRY PARTNERING SUMMIT. THE PRIMARY GOAL FOR EACH OF THOSE EVENTS WAS TO HIGHLIGHT UNIVERSITY INNOVATIONS BEFORE AN AUDIENCE OF PHARMACEUTICAL AND BIOTECH REPRESENTATIVES AND POTENTIAL INVESTORS OR VENTURE CAPITAL FIRMS.

THE NEW CONFERENCE IS A COMBINATION OF VARIOUS KEY ASPECTS FROM BOTH EVENTS, THEN AN EXPANSION TO INCLUDE THE ENTIRE MIDWEST AS A WAY TO ATTRACT MORE INTEREST FROM MAJOR PHARMACEUTICAL AND INVESTMENT FIRMS.

THE STRATEGY APPARENTLY WORKED. UNEMED HOSTED THE SECOND MIDWEST DRUG DEVELOPMENT CONFERENCE ON SEPT. 30-OCT. 1, 2019.

THRILLS! CHILLS! SPILLS!

UNEMED LAUNCHES TECH TRANSFER PODCAST

LAST YEAR, UNEMED LAUNCHED THE BEST—WHICH IS TO SAY THE ONLY—TECH TRANSFER PODCAST ON THE PLANET: **INNOVATION OVERGROUND**.

WHAT BEGAN AS AN EXPERIMENT IN THE MEDIUM FOR PROMOTING NEBRASKA INNOVATIONS AND THE VALUE OF TECHNOLOGY TRANSFER OFFICES EVERYWHERE, THE PROJECT STEADILY GREW INTO SOMETHING MORE. THE PODCASTERS QUICKLY EXPANDED THE MISSION TO INCLUDE RAISING AWARENESS ABOUT ACADEMIC INNOVATION EVERYWHERE, NOT JUST AT THE UNIVERSITY OF NEBRASKA.

THE PODCAST'S ORIGINAL INTENT WAS TO EXAMINE WHAT IT TAKES TO ADVANCE ACADEMIC INVENTIONS AND DISCOVERIES BEYOND THE RESEARCH BENCH AND INTO PEOPLE'S LIVES AS "ACTUAL THINGS ON A SHELF."

"WE REALLY WANT TO TELL THE UNTOLD STORIES OF INNOVATION," SAID JOE RUNGE, ONE OF THE PODCASTS' THREE CO-HOSTS AND UNEMED'S BUSINESS DEVELOPMENT MANAGER. "WE SEE THESE STORIES EVERY DAY, AND THEY'RE A REALLY INTERESTING AND FUN WAY TO SHOW PEOPLE HOW UNIVERSITIES—NOT JUST NEBRASKA—ARE WORKING TO IMPROVE OUR LIVES."

RUNGE IS ALSO THE ASSOCIATE DIRECTOR OF UNETECH, THE UNIVERSITY'S BIOTECH STARTUP ACCELERATOR IN OMAHA.



"WE COULD MAKE THIS ABOUT JUST NEBRASKA OR UNMC OR EVEN JUST UNEMED," RUNGE SAID. "BUT THEN THAT WOULDN'T BE VERY INTERESTING TO VERY MANY PEOPLE. WHAT IS INTERESTING IS FINDING THOSE STORIES AND TELLING THEM IN A COMPELLING WAY."

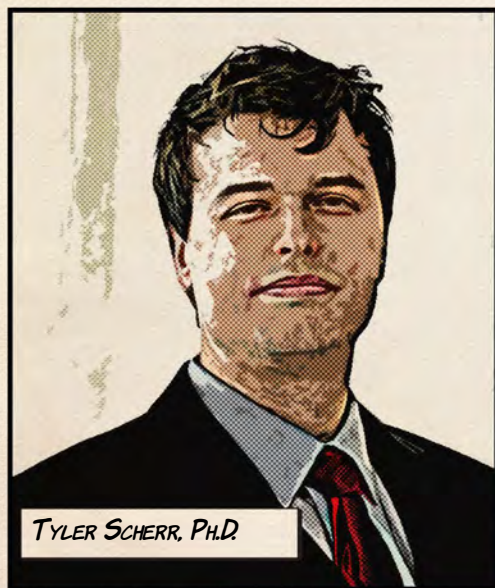
HE IS JOINED ON THE PODCAST BY UNEMED LICENSING ASSOCIATE TYLER SCHERR, PH.D., AND COMMUNICATIONS SPECIALIST CHARLIE LITTON. THE PODCAST IS CURRENTLY AVAILABLE ON ALL MAJOR HOSTING SERVICES, INCLUDING ITUNES, GOOGLE PLAY MUSIC, SPOTIFY AND IHEARTRADIO. IT'S ALSO AVAILABLE ON MOST OTHER SERVICES.

IN THE PREMIERE EPISODE, WHICH RUNS ABOUT 17 MINUTES, THE CO-HOSTS BANTERED ABOUT SOME OF THE MORE PERVERSIVE "MYTHS" ASSOCIATED WITH TECH TRANSFER. THEY ALSO DISCUSS THE IDEA OF MOVING PUBLICLY FUNDED RESEARCH INTO THINGS ON A SHELF, AND POINT OUT THAT INNOVATION DOESN'T HAVE TO BE A BIG IDEA TO MAKE A LIFE-ALTERING IMPACT.

LATER EPISODES DISCUSS MORE SPECIFIC TECHNOLOGIES AND THEIR POTENTIAL IMPACTS, SUCH AS THE CRISPR GENE-EDITING TOOL, HOME DNA TESTING KITS, DRONE TECHNOLOGY, AND DOZENS OF OTHERS.

"I THINK WHAT'S GREAT ABOUT THIS PROJECT ARE THE FUN LITTLE NUGGETS WE FIND ABOUT THE INNOVATIONS WE DISCUSS," SAID SCHERR. "THIS ISN'T GOING TO BE A WEEKLY INNOVATION INFOMERCIAL. OUR GOAL HERE IS TO MAKE THESE PODCASTS LESS 'SHAMWOW!' AND MORE VH-1'S 'BEHIND THE MUSIC.'"

ALL EPISODES TYPICALLY RUN ABOUT 15-20 MINUTES.



TYLER SCHERR, PH.D.



JOE RUNGE



CHARLIE LITTON

AMAZING!

UNO BIOMECHANICS IS ... 2018 INNOVATOR OF THE YEAR

OMAHA, NEBRASKA (OCT. 29, 2018)— THE UNIVERSITY OF NEBRASKA AT OMAHA HIGHLIGHTED THE 12TH INSTALLMENT OF THE ANNUAL INNOVATION AWARDS BANQUET WHEN UNO'S BIOMECHANICS PROGRAM BECAME THE FIRST DEPARTMENT TO CLAIM THE INNOVATOR OF THE YEAR AWARD.

THE AWARDS CEREMONY ALSO HONORED A MOST PROMISING NEW INVENTION AWARD AND A STARTUP OF THE YEAR. AN ESTIMATED AUDIENCE OF 183 ATTENDED THE EVENT.

EACH YEAR UNeMED CELEBRATES THE DISCOVERIES AND CREATIONS THAT EMANATE FROM UNMC AND UNO WITH AN AWARDS CEREMONY THAT HONORS ALL FACULTY, STUDENTS AND STAFF WHO SUBMITTED A NEW INVENTION, RECEIVED A UNITED STATES PATENT OR HAD THEIR TECHNOLOGY LICENSED DURING THE PREVIOUS FISCAL YEAR.

IN 2018, UNeTECH ALSO PRESENTED ITS FIRST-EVER AWARD: THE STARTUP OF THE YEAR. UNeTECH IS THE UNIVERSITY'S STARTUP ACCELERATOR AND INCUBATOR PROGRAM, WHICH WAS ESTABLISHED TO HELP NURTURE EARLY-STAGE TECHNOLOGIES AND FLEDGLING STARTUP COMPANIES THAT HAVE TIES TO THE UNIVERSITY.

CENTESE, INC., WAS NAMED THE STARTUP OF THE YEAR. LED AND CO-FOUNDED BY NEBRASKA NATIVE EVAN LUXON, CENTESE IS POISED TO BRING TO MARKET THORAGUARD, A MEDICAL DEVICE THAT AUTOMATICALLY CLEARS





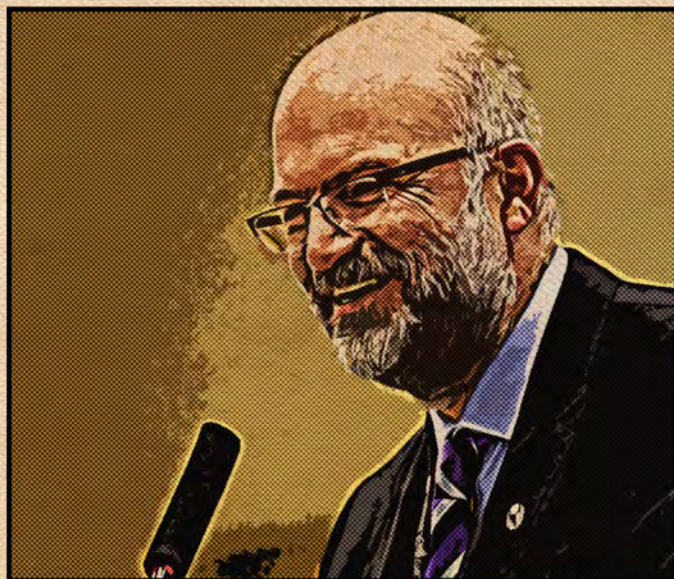
CHEST TUBE BLOCKAGES. CENTESE IS AWAITING FINAL FDA APPROVAL, WHICH COULD SOON PUT THORAGUARD ON THE MARKET.

UNeMED PRESENTED CATHERINE GEBHART, PH.D., (ABOVE, LEFT) AND VARUN KESHARWANI, PH.D., (ABOVE, RIGHT) THE MOST PROMISING NEW INVENTION AWARD. THEY COLLABORATED TO DEVELOP A TEST THAT DETECTS FOUR TYPES OF HUMAN HERPES VIRUS. THEIR APPROACH ALSO MINIMIZES THE RISK OF FALSE NEGATIVES.

NICHOLAS STERGIOU, PH.D., (BELOW) ACCEPTED THE INNOVATOR OF THE YEAR AWARD ON BEHALF OF HIS BIOMECHANICS DEPARTMENT AT UNO.

DR. STERGIOU IS THE FOUNDING CHAIR OF THE BIOMECHANICS DEPARTMENT, WHICH HAS PRODUCED A REMARKABLE PORTFOLIO OF INNOVATIONS THAT COULD HAVE SIGNIFICANT IMPACTS IN HEALTHCARE IN COMING YEARS.

AMONG THOSE INNOVATIONS IS A GAIT ANALYSIS SYSTEM THAT CAN LOOK AT THE WAY PEOPLE WALK AND DETERMINE THE RISK OF FALLS IN THE ELDERLY OR OTHER FRAIL PATIENTS. ANOTHER INNOVATION DETECTS CONCUSSIONS AND POTENTIALLY OTHER TRAUMATIC BRAIN INJURIES BY MEASURING THE SUBTLE FLUCTUATIONS IN A PERSON'S WEIGHT DISTRIBUTION AS THEY SIMPLY STAND IN PLACE. ANOTHER PROGRAM IS BUILDING LOW-COST, 3D-PRINTED PROSTHETIC LIMBS AND CYBERNETICS. AND YET ANOTHER PROGRAM COULD PREDICT SUDDEN ONSET OF LIFE-THREATENING SYMPTOMS FOR SUFFERERS OF CHRONIC OBSTRUCTIVE PULMONARY DISORDER OR COPD.



MORE 2018 INNOVATION AWARDS

AWARD HISTORY

MOST PROMISING NEW INVENTION

2018	CATHERINE GEBHART, PH.D. VARUN KESHARWANI, PH.D.	MULTIPLEX ASSAY FOR RAPID DETECTION OF HSV1, HSV2, EBV AND CMV BY qPCR
2017	JINGWEI XIE, PH.D. SHIXUAN CHEN, PH.D. MARK CARLSON, MD.	NANOFIBER SPONGES FOR HEMOSTASIS
2016	JOYCE SOLHEIM, PH.D. TATIANA BRONICH, PH.D.	COMPOSITIONS FOR MODULATED RELEASE OF PROTEINS AND METHODS OF USE THEREOF
2015	MICHAEL WADMAN, MD, FASEP THANG NGUYEN, M.S.N., A.B.R.N., F.N.R.C.	EMERGENCY MEDICINE CARE PORTFOLIO: WOUND IRRIGATION SYSTEM & ORAL AIRWAY MANAGEMENT
2014	JASON MACTAGGART, MD.	ORTHOGONAL AQUABLADE
2013	KESHORE BIDASEE, PH.D.	TARGETED GLYOXALASE-1 GENE TRANSFER TO PREVENT CARDIOVASCULAR AND END-ORGAN COMPLICATIONS IN DIABETES
2012	GREGORY OAKLEY, PH.D.	SMALL MOLECULE IN VIVO INHIBITORS OF THE N-TERMINAL PROTEIN INTERACTING DOMAIN OF RPA1
2011	BABU PADANILAM, PH.D.	NOVEL TARGET FOR THE TREATMENT OF RENAL FIBROSIS
2010	STEPHEN BONASERA, MD, PH.D.	NONINVASIVE MONITORING OF FUNCTIONAL BEHAVIORS IN AMBULATORY HUMAN POPULATIONS
2009	PAUL DUNMAN, PH.D.	NOVEL ANTIBIOTIC COMPOUNDS
*2008	GUANGSHUN (GLS) WANG, PH.D.	ANTI-HIV PEPTIDES AND METHODS OF USE THEREOF
*2008	JANINA BARANOWSKA-KORTYLEWICZ, PH.D.	SEX HORMONE BINDING GLOBULIN: NEW TARGET FOR CANCER THERAPY

*NOTE: MOST PROMISING NEW INVENTION AWARD WAS SHARED IN 2008

SPECIAL AWARDS

2018	UNO DEPARTMENT OF BIOMECHANICS	INNOVATOR OF THE YEAR
2018	CENTESE, INC.	STARTUP OF THE YEAR (UNETECH)
2017	DONNY SUH, MD.	EMERGING INVENTOR
2016	IRVING ZUCKER, PH.D.	INNOVATOR OF THE YEAR
2015	TAMMY KIELIAN, PH.D.	INNOVATOR OF THE YEAR
2014	MARILU FLORESCU, MD.	EMERGING INVENTOR
2013	HOWARD GENDELMAN, MD.	INNOVATOR OF THE YEAR
2012	TAMMY KIELIAN, PH.D.	EMERGING INVENTOR
2011	JONATHAN VENNERSTROM, PH.D.	LIFETIME ACHIEVEMENT
2010	AMARNATH NATARAJAN, PH.D.	EMERGING INVENTOR
2009	RODNEY MARKIN, MD, PH.D.	LIFETIME ACHIEVEMENT
2008	DONG WANG, PH.D.	EMERGING INVENTOR
2007	ROBERT LEVEEN, MD.	LIFETIME ACHIEVEMENT



GENDELMAN BREAKS INTERNET WITH HIV NEWS

IT'S EASY TO GET EXCITED WHEN ONE OF OUR RESEARCHERS SCORES INTERESTING RESULTS FROM AN EXPERIMENT. WHEN THOSE RESULTS THEN LEAD TO A PRESTIGIOUS PUBLICATION, IT GETS EVEN MORE TEMPTING TO START SHOUTING FROM THE ROOFTOPS.

STILL, WE TRY TO TEMPER OUR ENTHUSIASM AS BEST WE CAN BECAUSE A LOT OF THE TECHNOLOGIES WE SEE ARE STILL YEARS AWAY FROM REACHING THE CLINIC.

THEN, ON JULY 2, 2019, HOWARD GENDELMAN, M.D., STOOD BEFORE A GATHERING OF REPORTERS AND CAMERAS, AND REVEALED HIS MOST RECENT PUBLICATION IN *NATURE COMMUNICATIONS*.

HE KNOCKED EVERYONE'S SOCKS OFF.

ALONG WITH HIS TEAM AND PARTNERS AT TEMPLE UNIVERSITY, DR. GENDELMAN SHOWED THAT A TREATMENT REGIMEN INVOLVING CRISPR AND HIS LASER ART TECHNOLOGY MAY ONE DAY BE ABLE TO CURE HIV. AND HOPEFULLY SOONER THAN ANYONE THOUGHT POSSIBLE.

DR. GENDELMAN'S INNOVATION IS AN IMPROVEMENT ON EXISTING HIV TREATMENTS KNOWN AS ANTIRETROVIRAL THERAPIES OR ART. ONE PROBLEM WITH ANTIRETROVIRAL THERAPIES: THEY ARE INEFFECTIVE

AT REACHING VIRAL RESERVOIRS SUCH AS THE LYMPH NODES AND THE CENTRAL NERVOUS SYSTEM. THESE VIRAL RESERVOIRS ESSENTIALLY SERVE AS BUNKERS THAT SHELTER HIV FROM CURRENT MEDICATIONS.

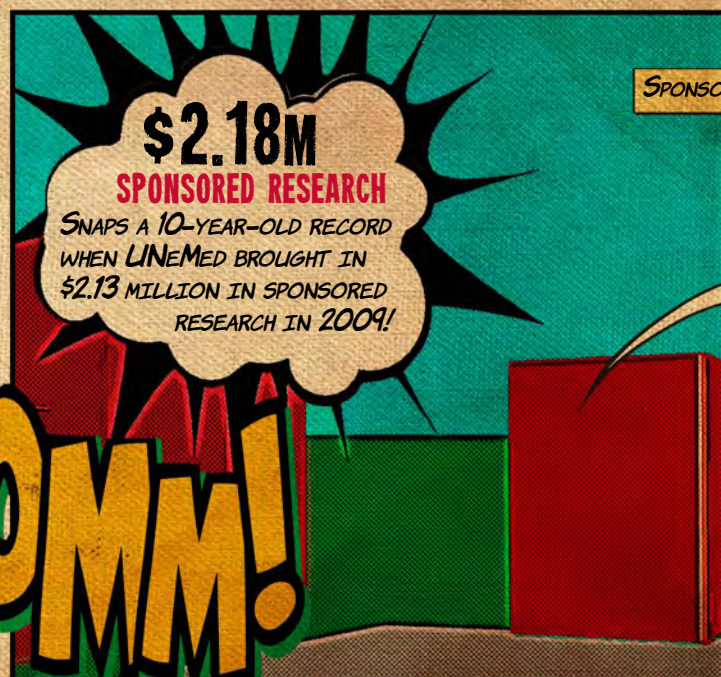
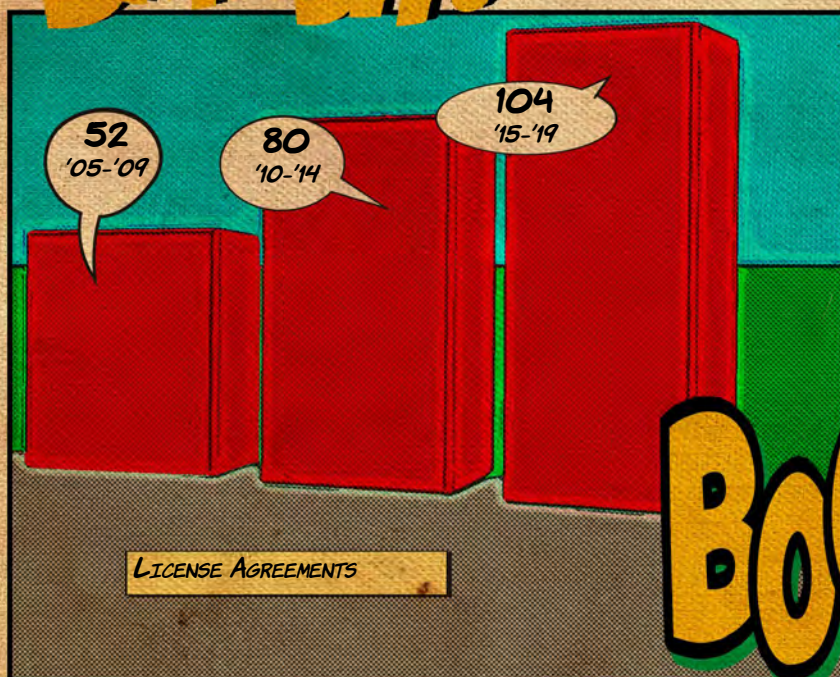
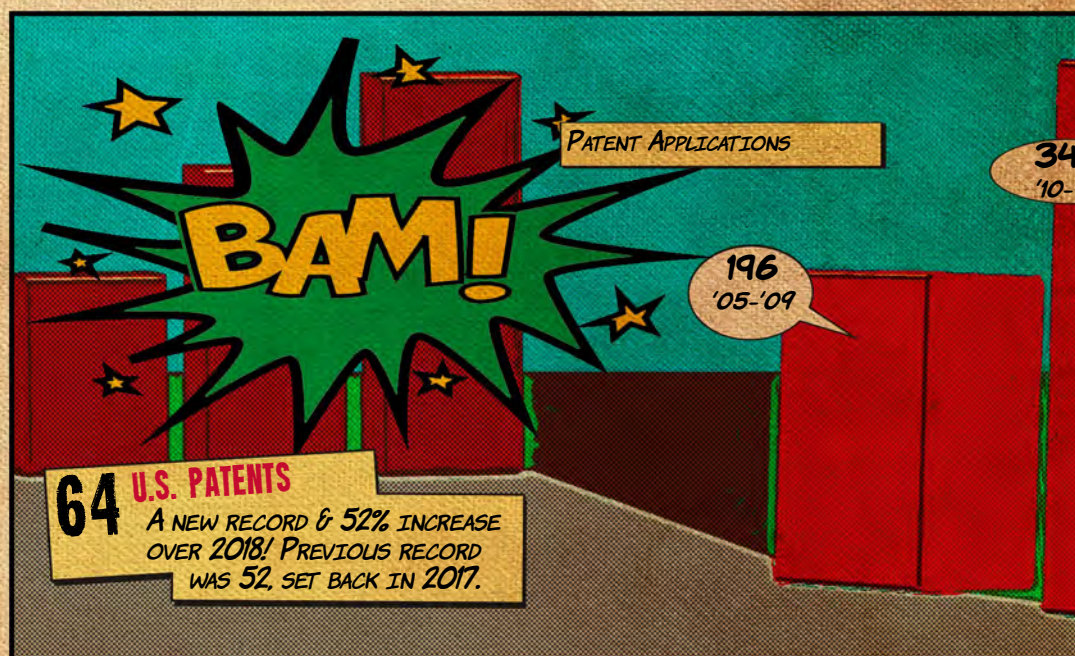
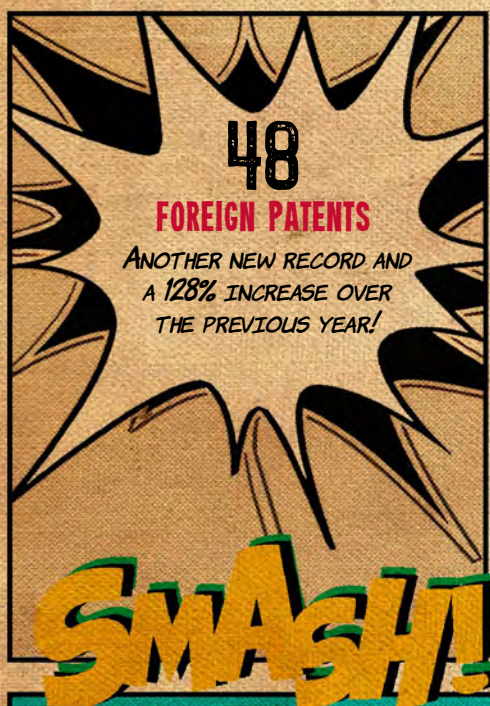
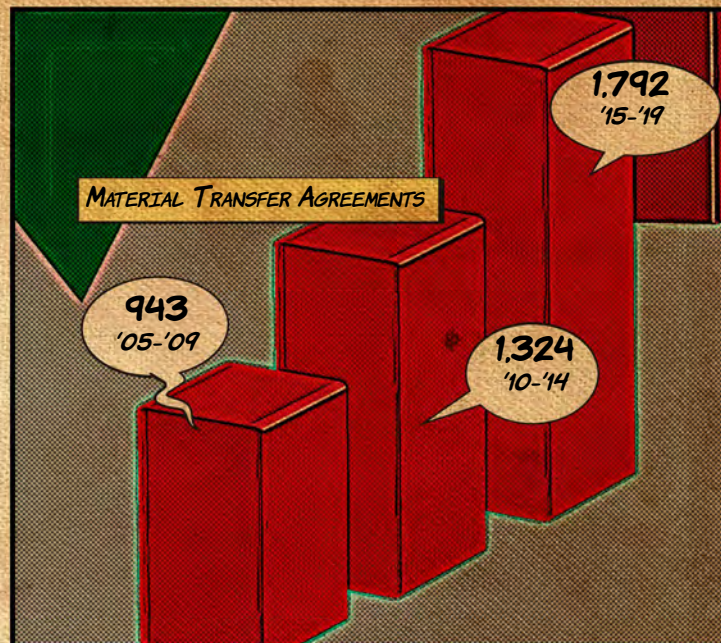
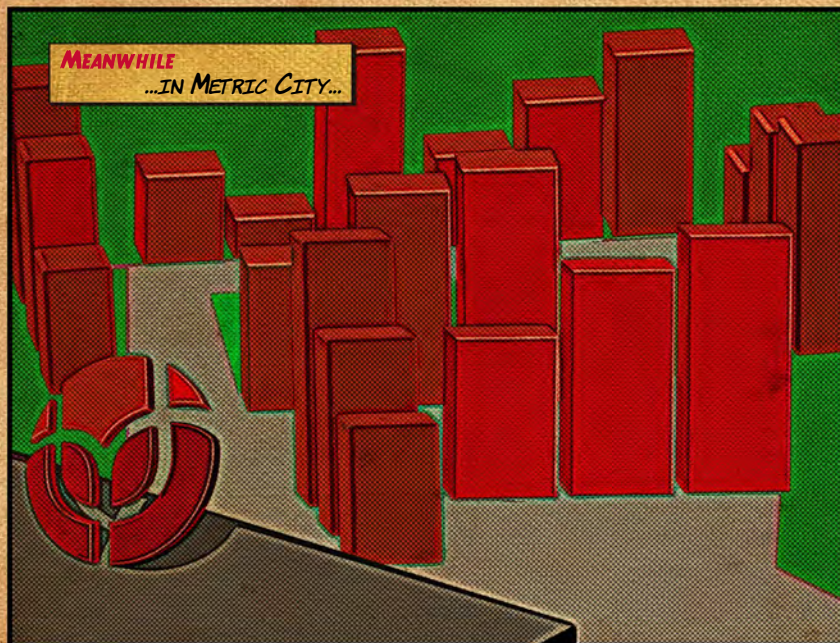
DR. GENDELMAN'S LASER ART—SHORT FOR LONG ACTING SLOW EFFECTIVE RELEASE FOR ANTI-RETROVIRAL THERAPIES—USES THE POWER OF THE PATIENT'S IMMUNE SYSTEM TO STORE AND DELIVER MEDICATIONS THROUGHOUT THE ENTIRE BODY IN A SUSTAINED RELEASE FORMULATION.

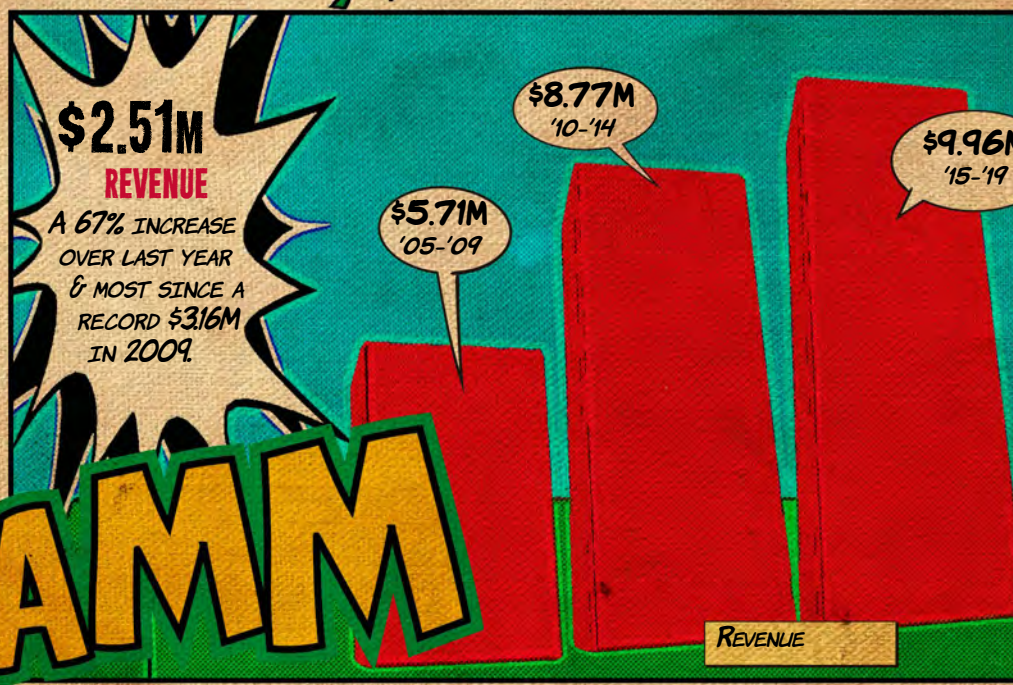
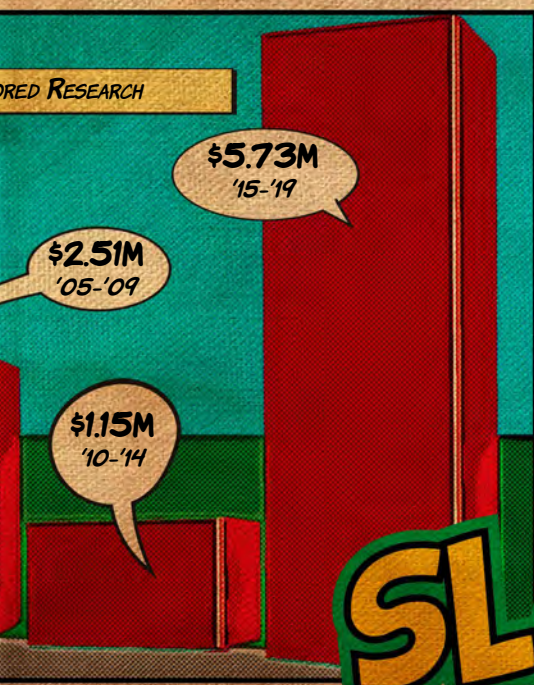
LASER ART TARGETS THE IMMUNE SYSTEM'S HUNTER CELLS, OR MACROPHAGES, WHICH ROAM THE BODY ON A PERPETUAL SEEK AND DESTROY MISSION LOOKING FOR FOREIGN INVADERS. LASER ART PIGGYBACKS ON THE MACROPHAGES, WHICH HAVE FULL ACCESS TO ALL PARTS OF THE BODY, INCLUDING THE CENTRAL NERVOUS SYSTEM—A PARTICULARLY DIFFICULT SYSTEM TO HACK FOR MOST MODERN MEDICINES.

DR. GENDELMAN'S LATEST EXPERIMENTS APPARENTLY CURED A SMALL NUMBER OF MICE INFECTED WITH HIV.

IT MIGHT STILL BE YEARS BEFORE THE INNOVATION MOVES INTO CLINICAL TRIALS, BUT THAT DIDN'T STOP THE NEWS FROM BLOWING UP ACROSS THE INTERNET AND AIRWAVES.

<p>Genetic Engineering & Biotechnology News CRISPR and LASER ART Eliminate HIV from Mice Yesterday</p>		<p>The Week Magazine Is gene-editing the future of HIV treatment? Yesterday</p>	
<p>KFSN-TV UNMC researchers announce major step toward possible cure for HIV Yesterday</p>		<p>Yahoo News Researchers have eliminated HIV in mice for the first time. Is a cure for humans next? 4 hours ago</p>	
<p>SCIN NEWS HIV cure? Scientists eliminate AIDS virus from mouse genome using CRISPR gene-editing technology; possible step towards cure in people 2 hours ago</p>		<p>TIME For the First Time, Researchers Eliminated HIV From the Genomes of Living Animals Yesterday</p>	
<p>PBS NEWSHOUR CRISPR gene-editing 'eliminates' HIV in some mice. What does it mean for humans? Yesterday</p>		<p>wptv.com Science 'closer than ever' to finding a cure for HIV Yesterday</p>	
<p>Daily Mail Scientists eliminate HIV in the entire genome of lab mice for the first time ever Yesterday</p>		<p>EurekAlert HIV eliminated from the genomes of living animals Yesterday</p>	
<p>Good News Network For First Time Ever, Scientists Have Cured Living Creatures of HIV and Eliminated Virus From DNA Entirely 1 hour ago</p>		<p>IFLScience Scientists Successfully Eliminate HIV From The Genomes Of Mice Yesterday</p>	
<p>New Atlas Scientists combine CRISPR and drug therapy to cure HIV infection in mice for the first time 9 hours ago</p>		<p>Salt HIV cure 'closer than ever' as scientists wipe out virus for first time in living animals 4 hours ago</p>	
<p>Telegraph.co.uk HIV patients could undergo genetic editing within year to snip away virus Yesterday</p>		<p>NewScientist Have mice really been cured of HIV using CRISPR gene editing? Yesterday</p>	
<p>PhillyVoice.com</p>		<p>CNN</p>	







U.S. PATENTS

LIST OF ALL U.S. PATENTS ISSUED TO LINMC & LINO PERSONNEL DURING THE FISCAL YEAR ENDING IN 2019. INFORMATION INCLUDES PATENT NUMBERS, PATENT TITLES, THE DATE THE PATENT WAS ISSUED AND THE NAMES OF ALL CO-INVENTORS LISTED ON THE PATENT.

"LOCK-BLOCK SHIELD DEVICE"

U.S. PATENT No. 10,010,297 – ISSUED JULY 3, 2018
GREGORY GORDON

"METHOD OF TARGETING GLYCOPROTEINS TO TREAT CANCER"

U.S. PATENT No. 10,023,652 – ISSUED JULY 17, 2018
MICHAEL (TONY) HOLLINGSWORTH
PRAKASH RADHAKRISHNAN

"COMPOSITIONS AND METHODS FOR THE TREATMENT OF CANCER"

U.S. PATENT No. 10,022,325 – ISSUED JULY 17, 2018
ALEXANDER KABANOV
DARIA ALAKHOVA
YI ZHAO

"STENT TO ASSIST IN ARTERIOVENOUS FISTULA FORMATION"

U.S. PATENT No. 10,034,739 – ISSUED JULY 31, 2018
MARIUS FLORESCU

"ON-BOARD TOOL TRACKING SYSTEM AND METHODS OF COMPUTER ASSISTED SURGERY"

U.S. PATENT No. 10,080,617 – ISSUED SEPTEMBER 25, 2018
IBRAHIM AL-SHAWI
HANI HAIDER
O. ANDRES BARRERA

"MODIFIED PIGMENT EPITHELIUM-DERIVED FACTOR (PEDF) PEPTIDES AND USES THEREOF FOR TREATING NEOVASCULAR DISEASES, INFLAMMATORY DISEASES, CANCER, AND FOR CYTOPROTECTION"

U.S. PATENT No. 10,081,668 – ISSUED SEPTEMBER 25, 2018
SERGUEI VINOGRADOV
JACK HENKIN
IGNACIO MELGAR-ASENSIO
OLGA VOLPERT

"MACROMOLECULAR DELIVERY SYSTEMS FOR NON-INVASIVE IMAGING, EVALUATION AND TREATMENT OF ARTHRITIS AND OTHER INFLAMMATORY DISEASES"

U.S. PATENT No. 10,092,662 – ISSUED OCTOBER 9, 2018
DONG WANG
JINDRICH KOPECEK
PAVLA KOPECKOVA
SCOTT MILLER

"ON-BOARD TOOL TRACKING SYSTEM AND METHODS OF COMPUTER ASSISTED SURGERY"

U.S. PATENT No. 10,105,149 – OCTOBER 23, 2018
HANI HAIDER
IBRAHIM AL-SHAWI
O. ANDRES BARRERA
DAVID SAUNDERS

"ROBOTIC SURGICAL DEVICES, SYSTEMS AND RELATED METHODS"

U.S. PATENT No. 10,111,711 – ISSUED OCTOBER 30, 2018
SHANE FARRITOR
TYLER WORTMAN
RYAN MCCORMICK
DMITRY OLEYNIKOV
KYLE STRABALA
AMY LEHMAN

"ANTI-MICROBIAL PEPTIDES AND COATINGS"

U.S. PATENT No. 10,144,767 – ISSUED DECEMBER 4, 2018
GUANGSHUN WANG

"MACROMOLECULAR DELIVERY SYSTEMS FOR NON-INVASIVE IMAGING, EVALUATION AND TREATMENT OF ARTHRITIS AND OTHER INFLAMMATORY DISEASES"

U.S. PATENT No. 10,172,962 – ISSUED JANUARY 8, 2019
DONG WANG
SCOTT MILLER
PAVLA KOPECKOVA
JINDRICH KOPECEK

"CREATINE ESTER ANTI-INFLAMMATORY COMPOUNDS AND FORMULATIONS"

U.S. PATENT No. 10,206,897 – ISSUED FEBRUARY 19, 2019
DONALD MILLER
THOMAS McDONALD
DENNIS ROBINSON
JON WAGNER
SAMUEL AUGUSTINE

"SINGLE SITE ROBOTIC DEVICE AND RELATED SYSTEMS AND METHODS"

U.S. PATENT No. 10,219,870 – ISSUED MARCH 5, 2019
TOM FREDERICK
JOE BARTELS
ERIC MARKVICKA
SHANE FARRITOR
JACK MONDRY

"CONTROLLED RELEASE PEPTIDE COMPOSITIONS AND USES THEREOF"

U.S. PATENT No. 10,220,002 – ISSUED MARCH 5, 2019
JOSEPH VETRO
SAM SANDERSON

"ON-BOARD TOOL TRACKING SYSTEM AND METHODS OF COMPUTER ASSISTED SURGERY"

U.S. PATENT No. 10,219,811 – ISSUED MARCH 5, 2019
O. ANDRES BARRERA
IBRAHIM AL-SHAWI
HANI HAIDER

"ROBOTIC SURGICAL DEVICES AND RELATED METHODS"

U.S. PATENT No. 10,307,199 – ISSUED JUNE 4, 2019
MARK RENTSCHLER
NATHAN WOOD
AMY LEHMAN
JASON DUMPERT
DMITRY OLEYNIKOV
SHANE FARRITOR

FEATURED TECHNOLOGIES

PDE4B SELECTIVE INHIBITORS

IMPROVE INFLAMMATORY DISEASE TREATMENTS

A UNMC CHEMIST HAS DEVELOPED NEW COMPOUNDS FOR THE TREATMENT OF INFLAMMATORY DISEASES.

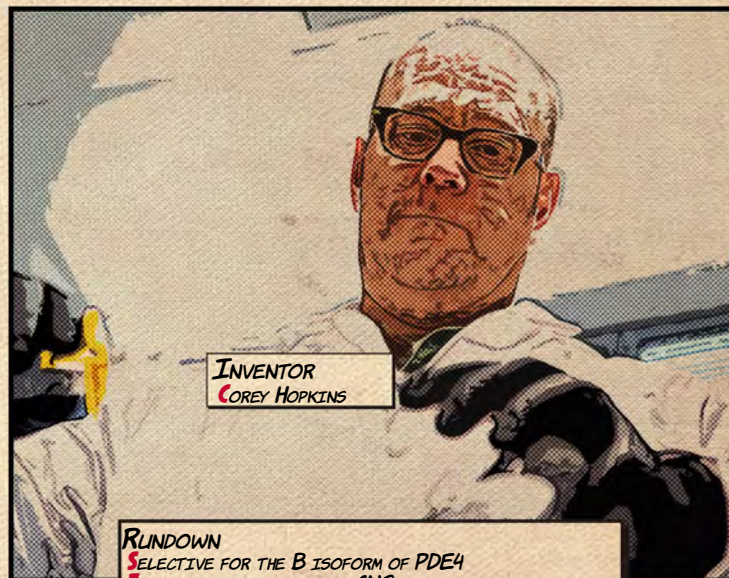
THESE COMPOUNDS TARGET A PROTEIN CALLED PHOSPHODIESTERASE 4, OR **PDE4** FOR SHORT. **PDE4** REGULATES INFLAMMATION, AND IS INVOLVED IN A NUMBER OF INFLAMMATORY DISEASES SUCH AS CHRONIC OBSTRUCTIVE PULMONARY DISEASE, RHEUMATOID ARTHRITIS, PSORIASIS, ATOPIC DERMATITIS, INFLAMMATORY BOWEL DISEASE, AND CENTRAL NERVOUS SYSTEM DISEASES THAT INCLUDE DRUG ADDICTION, SCHIZOPHRENIA AND NEURODEGENERATIVE DISEASES.

SEVERAL APPROVED DRUGS CURRENTLY TARGET **PDE4**, BUT WITH SEVERE SIDE EFFECTS—LIKE NAUSEA AND VOMITING—THAT LIMIT THEIR USE. MANY OF THE CURRENT **PDE4** INHIBITORS HAVE POOR UPTAKE INTO THE CENTRAL NERVOUS SYSTEM WHICH LIMITS THEIR USE IN THE TREATMENT OF CENTRAL NERVOUS SYSTEM DISEASES.

UNMC'S NEW **PDE4** INHIBITORS SPECIFICALLY TARGET THE **B** ISOFORM, SIGNIFICANTLY REDUCING UNPLEASANT SIDE-EFFECTS SUCH AS NAUSEA AND VOMITING. TARGETING **PDE4B** SHOULD HELP SIGNIFICANTLY REDUCE SIDE EFFECTS SUCH AS NAUSEA AND VOMITING.

THE NEW **PDE4** INHIBITORS ARE DESIGNED FOR INCREASED UPTAKE INTO THE CENTRAL NERVOUS SYSTEM, MAKING THEM MORE USEFUL THAN CURRENT DRUGS FOR TREATING CENTRAL NERVOUS SYSTEM-RELATED INFLAMMATORY DISEASES.

INITIAL LEAD COMPOUNDS EXHIBIT NANOMOLAR POTENCY AGAINST **PDE4B**, AN 8-10 FOLD IMPROVED SELECTIVITY FOR **PDE4B**, AND GOOD UPTAKE INTO THE BRAIN. ONE LEAD COMPOUND HAS ALSO SHOWN SIGNIFICANT IMPROVEMENT IN A MOUSE MODEL OF COCAINE ADDICTION.



INVENTOR
COREY HOPKINS

RUNDOWN

SELECTIVE FOR THE **B** ISOFORM OF **PDE4**
ENHANCED UPTAKE INTO THE **CNS**
NANOMOLAR POTENCY
USEFUL FOR TREATING A VARIETY OF INFLAMMATORY DISEASES

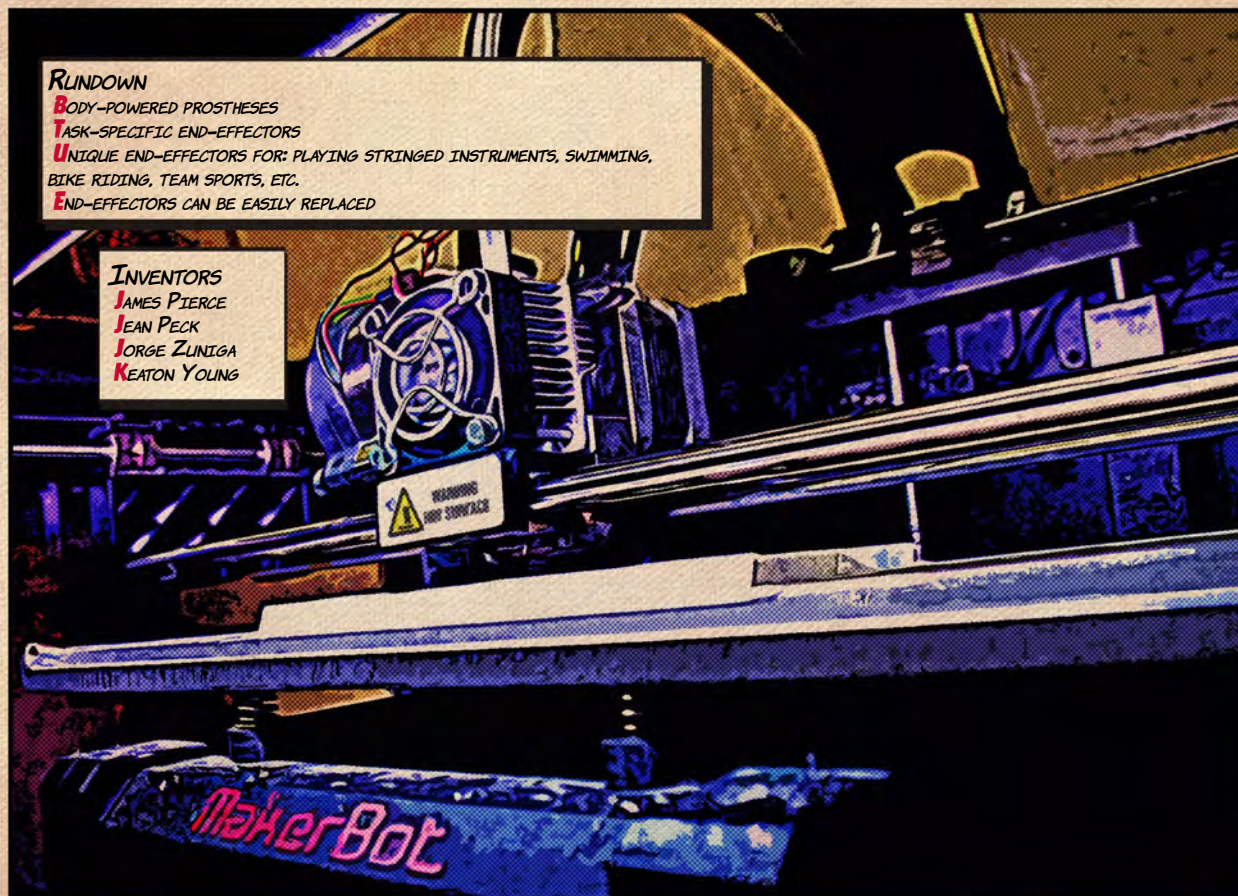
MODULAR PROSTHETIC ARM

PROSTHETICS CAN ADAPT TO USER'S LIFESTYLE

A MODULAR PROSTHETIC ARM, INVENTED AT **UNO BIOMECHANICS**, IS BODY-POWERED, LIGHTWEIGHT AND MADE TO ACCOMMODATE A SMORGASBORD OF TASK-SPECIFIC END-EFFECTOR ATTACHMENTS. THE END-EFFECTORS ARE SPECIALLY ENGINEERED TO PERFORM SPECIFIC, CHALLENGING TASKS SUCH AS PLAYING A STRINGED INSTRUMENT, SWIMMING, RIDING A BIKE, AND PARTICIPATING IN TEAM SPORTS LIKE BASKETBALL AND BASEBALL.

THE END-EFFECTORS CAN BE EASILY REMOVED AND REPLACED AS NEEDED SO ACTIVE USERS CAN EASILY MOVE FROM ONE TASK TO THE NEXT.

MOST OF THE PROSTHETIC'S PARTS CAN BE BUILT USING A 3D PRINTER SIMILAR TO WHAT IS PICTURED AT RIGHT.



RUNDOWN

BODY-POWERED PROSTHESES
TASK-SPECIFIC END-EFFECTORS
UNIQUE END-EFFECTORS FOR: PLAYING STRINGED INSTRUMENTS, SWIMMING, BIKE RIDING, TEAM SPORTS, ETC.
END-EFFECTORS CAN BE EASILY REPLACED

INVENTORS

JAMES PIERCE
JEAN PECK
JORGE ZUNIGA
KEATON YOUNG

FEATURED TECHNOLOGIES

ANTIMICROBIAL PEPTIDES

IMBUE ORTHOPEDIC IMPLANTS WITH PRIMARY IMMUNITY

ORTHOPEDIC IMPLANTS, SUCH AS HIP OR KNEE REPLACEMENTS, ALL EVENTUALLY FAIL DUE TO WEAR AND TEAR. BUT IF AN IMPLANT GETS INFECTED IT FAILS MUCH MORE RAPIDLY AND CAN EVEN LEAD TO DEATH.

RESEARCHERS AT THE UNIVERSITY OF NEBRASKA MEDICAL CENTER DISCOVERED A NEW WAY TO PREVENT IMPLANT-ASSOCIATED BIOFILM INFECTIONS. GUANGSHUN WANG, PH.D., DESIGNED ANTIMICROBIAL PEPTIDES TO COAT THE SURFACE OF METALLIC ORTHOPEDIC IMPLANTS AND SPECIFICALLY TARGET ANTIBIOTIC RESISTANT INFECTIONS KNOWN AS MRSA OR METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS. NOT ONLY DO THE NOVEL PEPTIDES PREVENT MRSA BIOFILM FORMATION, BUT THEY ALSO RECRUIT HOST IMMUNE CELLS TO HELP CLEAR ANY OPPORTUNISTIC BACTERIA.

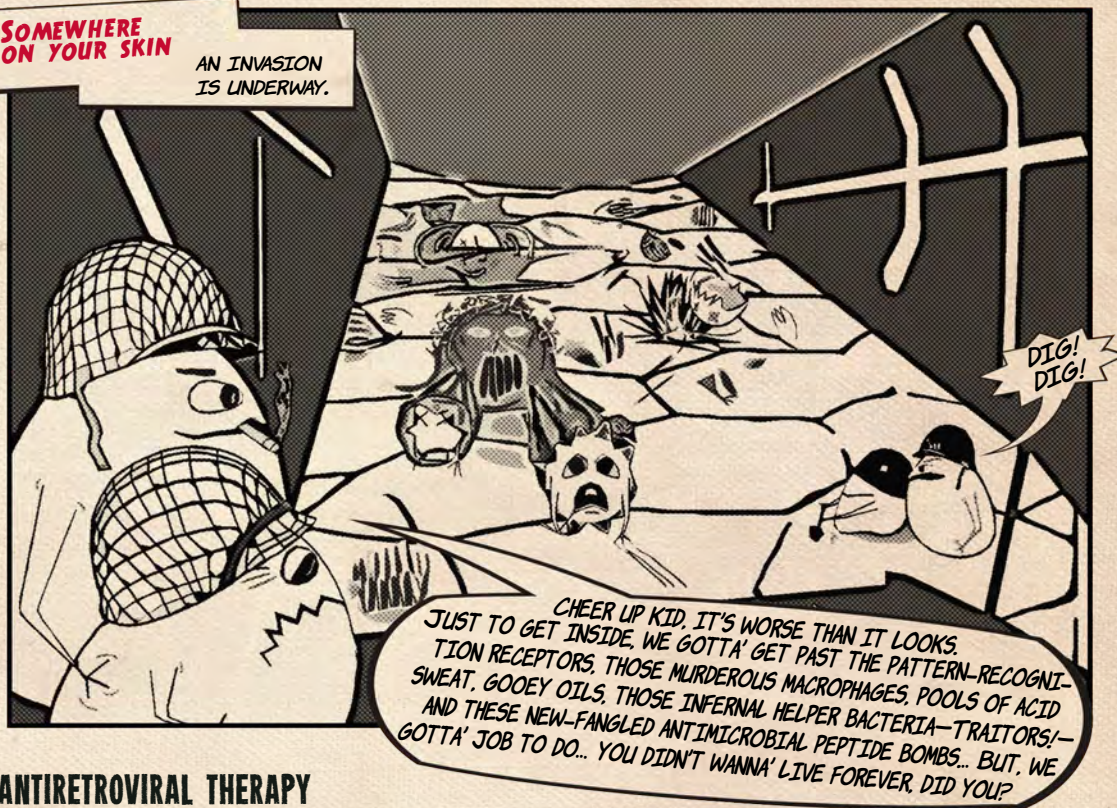
BY ADDING THESE PEPTIDES TO AN IMPLANT'S SURFACE, DR. WANG'S TECHNOLOGY EFFECTIVELY IMBUES THE MEDICAL DEVICE WITH ITS OWN INNATE IMMUNITY. IN HUMANS, INNATE IMMUNITY REPRESENTS THE FRONT LINE DEFENSE AGAINST PATHOGENS. IMPLANTS, HOWEVER, HAVE NO SUCH BASIC PROTECTIONS AGAINST INFECTIONS, INCLUDING MRSA, WHICH ACCOUNTS FOR TWO-THIRDS OF ALL ORTHOPEDIC IMPLANT INFECTIONS. IMPLANTS CAN BECOME UNCHECKED BREEDING GROUNDS FOR BIOFILM INFECTIONS AND ULTIMATELY LEAD TO TOTAL DEVICE REPLACEMENT—AT BEST.

MORE THAN ONE MILLION AMERICANS RECEIVE HIP OR KNEE REPLACEMENTS EACH YEAR. OF THESE PATIENTS, APPROXIMATELY 100,000 WILL UNDERGO A REPEAT PROCEDURE TO ALLEVIATE PAIN ASSOCIATED WITH PROSTHETIC LOOSENING OR BACTERIAL INFECTION.

AS AN OPPORTUNISTIC PATHOGEN, MRSA HAS EVOLVED NUMEROUS STRATEGIES FOR EVADING THE HUMAN IMMUNE SYSTEM. MRSA HAS A PARTICULARLY NOTORIOUS ABILITY TO FIND, ATTACH TO, AND CREATE BACTERIAL BIOFILMS ON ORTHOPEDIC IMPLANTS. ONCE A MRSA BIOFILM IS FULLY FORMED, THE ONLY EFFECTIVE TREATMENT INVOLVES TOTAL REMOVAL OF THE ORTHOPEDIC IMPLANT. EVEN THEN, THE PATIENT IS AT A PERMANENTLY INCREASED RISK FOR REPEAT INFECTION.

SOMEWHERE
ON YOUR SKIN

AN INVASION
IS UNDERWAY.



ANTIRETROVIRAL THERAPY

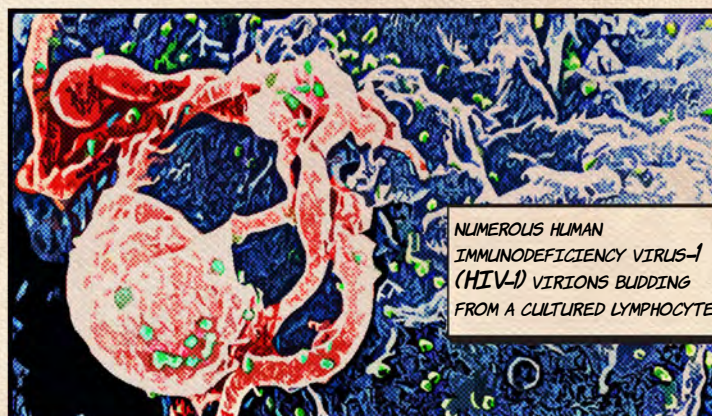
NEW DELIVERY METHOD OPENS POWERFUL OPTION FOR HIV

EARLY STUDIES SHOW UNMC'S NOVEL APPROACH TO HIV TREATMENT COULD REDUCE THE REGIMEN TO A SINGLE TREATMENT ONCE EVERY MONTH (OR EVEN LESS OFTEN), ELIMINATING THE NEED FOR CURRENT STRATEGIES THAT REQUIRE DAILY ADMINISTRATION OF MEDICINE.

ANTIRETROVIRAL THERAPIES, OR ART, ARE INEFFECTIVE AT REACHING VIRAL RESERVOIRS IN THE LYMPH NODES AND THE CENTRAL NERVOUS SYSTEM. RESERVOIRS LIKE THESE ESSENTIALLY SERVE AS A BUNKERS THAT SHELTER HIV FROM MEDICATION.

UNMC RESEARCHERS OVERCAME THIS OBSTACLE WITH A NEW NANOFORMULATION CALLED LASER ART.

LASER ART HARNESSES THE POWER OF THE PATIENT'S IMMUNE SYSTEM TO STORE AND DELIVER ART MEDICATIONS THROUGHOUT THE ENTIRE BODY IN A SUSTAINED



NUMEROUS HUMAN IMMUNODEFICIENCY VIRUS-1 (HIV-1) VIRIONS BUDDING FROM A CULTURED LYMPHOCYTE.

RELEASE FORMULATION.

LASER ART PIGGYBACKS ON MACROPHAGES, WHICH HAVE FULL ACCESS TO ALL PARTS OF THE BODY, INCLUDING THE CENTRAL NERVOUS SYSTEM—A PARTICULARLY DIFFICULT SYSTEM TO HACK FOR MOST MODERN MEDICINES.

EARLY TESTS ON MOUSE MODELS AND LARGE ANIMALS SHOW THAT LASER ART PRODUCES A

SUSTAINED RELEASE WITH LONG-LASTING ANTIRETROVIRAL ACTIVITY.

WITH FURTHER DEVELOPMENT LASER ART COULD HAVE A DRAMATIC IMPACT ON THE ESTIMATED 34.2 MILLION PEOPLE ON THE PLANET WHO ARE AFFECTED BY HIV. THE CENTERS FOR DISEASE CONTROL ESTIMATES 1.1 MILLION AMERICANS ARE LIVING WITH HIV INFECTION.

FEATURED TECHNOLOGIES

SUH PRECISION INJECTION SYRINGE

NEW SYRINGE ALLOWS PRECISE, ONE-HANDED INJECTIONS



RUNDOWN

CAN BE SECURELY OPERATED WITH ONE HAND
ALLOWS USE OF A PRECISE, PENCIL-GRIP
DESIGNED WITH FEEDBACK FROM SEVERAL CLINICAL SPECIALTIES
POTENTIAL APPLICATIONS IN OPHTHALMOLOGY, ENT PLASTIC SURGERY, PEDIATRIC SURGERY, RHEUMATOLOGY AND SELF-INJECTIONS

A NOVEL SYRINGE DEVELOPED AT THE UNIVERSITY OF NEBRASKA MEDICAL CENTER ENABLES USERS TO SAFELY PERFORM ONE-HANDED INJECTIONS WITH IMPROVED CONTROL. THE NEW SYRINGE IS PARTICULARLY USEFUL IN SEVERAL DELICATE MEDICAL PROCEDURES, LIKE CORRECTING CROSSED OR LAZY EYES IN CHILDREN. THE SYRINGE FREES UP THE OTHER HAND TO SAFELY SECURE THE INJECTION SITE, ALLOWING DOCTORS EVEN MORE PRECISION.

LED BY UNEMED'S 2017 INNOVATOR OF THE YEAR, PEDIATRIC OPHTHALMOLOGIST DONNY SUH, M.D., THE INVENTORS GATHERED HANDS-ON FEEDBACK FROM A WIDE RANGE OF CLINICAL SPECIALISTS TO CREATE AN ELEGANT WORKING PROTOTYPE. WHILE THE DESIGN FACILITATES THE COMFORTABLE OPERATION OF THE SYRINGE WITH ONE HAND, IT CAN STILL BE USED AS A TRADITIONAL SYRINGE.

THIS TECHNOLOGY HAS POTENTIAL APPLICATIONS IN OPHTHALMOLOGY, EAR-NOSE-THROAT, RHEUMATOLOGY, PLASTIC SURGERY, AND SELF-INJECTIONS, AMONG OTHERS. CURRENTLY, THERE IS STRONG CLINICAL INTEREST IN USING THIS SYRINGE FOR THE DELICATE DELIVERY OF THERAPEUTICS FOR THE TREATMENT OF ACUTE MACULAR DEGENERATION.

WE ARE NOW WORKING WITH A MANUFACTURING PARTNER TO DEVELOP A FINAL WORKING PROTOTYPE FOR REGULATORY TESTING AND APPROVAL.

INVENTOR
 DONNY SUH

SMZL SPECIFIC BIOMARKERS

DIAGNOSE, MONITOR RARE LYMPHOMA WITH BLOOD SAMPLE

A NEW SET OF BIOMARKERS COULD HELP IN THE DIAGNOSIS AND PROGNOSIS OF A RARE FORM OF CANCER.

SPLENIC MARGINAL ZONE LYMPHOMA, A CANCER OF THE SPLEEN, AFFECTS APPROXIMATELY 2,000 PEOPLE ANNUALLY IN THE UNITED STATES.

HOWEVER, CURRENT DIAGNOSIS IS OFTEN TIMES UNCLEAR AND TYPICALLY REQUIRES REMOVAL OF PART OR ALL OF THE SPLEEN.

BY SYSTEMATICALLY ANALYZING 39,000 GENES PRESENT IN 437 CLINICAL SAMPLES ACROSS 13 CLINICAL DATASETS, RESEARCHERS AT THE UNIVERSITY OF NEBRASKA AT OMAHA IDENTIFIED A UNIQUE 135-GENE PROFILE UNIQUE TO THIS

RARE FORM OF SPLENIC LYMPHOMA. INTRIGUINGLY, SEPARATE SUBSETS OF SEVEN AND TWO BIOMARKERS WERE DEMONSTRATED TO BE GREATER THAN 93 PERCENT ACCURATE AT DIAGNOSING SPLENIC LYMPHOMA VERSUS ALL OTHER B-CELL LYMPHOMAS.

UNLIKE MOST DIAGNOSTICS, THESE BIOMARKERS CAN BE MEASURED IN BLOOD AS WELL AS IN FRESH OR PRESERVED TISSUE SAMPLES.

WITH FURTHER VALIDATION, THESE BIOMARKERS COULD ALSO BE USED TO MONITOR SPLENIC LYMPHOMA PROGRESSION AND METASTASIS IN REAL-TIME, ENABLING ONCOLOGISTS TO PROVIDE TIMELY AND EFFECTIVE TREATMENT.

RUNDOWN

NOVEL BIOMARKERS FOR SPLENIC MARGINAL ZONE LYMPHOMA
POSITIVELY DIAGNOSE SMZL FROM ALL OTHER B-CELL LYMPHOMAS
MEASURE BIOMARKERS IN BLOOD AND IN FRESH OR PRESERVED SPLENIC BIOPSIES
POTENTIAL TO MONITOR SMZL PROGRESSION IN REAL-TIME

INVENTORS
 CHRISTINE CUTICACHE
 JACOB ROBINSON



FEATURED TECHNOLOGIES

DISTAL RADIUS FRACTURE PLATING SYSTEM

UNIVERSAL PLATING SYSTEM SAVES TIME, IMPROVES OUTCOMES

WRIST FRACTURES DON'T COME IN ONE SHAPE AND SIZE, BUT A NEW FIXATION DEVICE JUST MIGHT. A LEADING ORTHOPEDIC SURGEON AT THE UNIVERSITY OF NEBRASKA MEDICAL CENTER, DANIEL FIRESTONE, M.D., INVENTED A UNIVERSAL WRIST FRACTURE FIXATION PLATE. BY STUDYING FRAGMENT-SPECIFIC PLATING SYSTEMS, DR. FIRESTONE DESIGNED A NOVEL PLATE THAT BLENDS THE ESSENTIAL COMPONENTS OF EACH. THE RESULT IS AN ELEGANT SYSTEM WITH ENOUGH FLEXIBILITY TO SECURE ANY OF THE MOST COMMON WRIST FRACTURE PATTERNS.

THE FIRESTONE PLATING SYSTEM IS A NEXT-GENERATION TECHNOLOGY THAT PROVIDES ALL OF THE BENEFITS OF FRAGMENT SPECIFIC PLATING WITHOUT THE DRAWBACKS ASSOCIATED WITH SURGICALLY PLACING MULTIPLE DEVICES. IT SINGLEHANDEDLY ADDRESSES A NUMBER OF FRACTURES IN BOTH DORSAL AND VOLAR FRAGMENTS. IT IS EASY TO USE AND EASIER TO INSTALL, POTENTIALLY INCREASING OPERATING ROOM AND SURGICAL EFFICIENCY.

RUNDOWN

- U**NIVERSAL PLATE FOR DISTAL RADIUS FRACTURES
- B**ENEFIT OF OPTIMAL FRAGMENT FIXATION SYSTEMS
- B**ENEFIT OF SURGEON COMFORT WITH THE PROCEDURE
- R**EPLACES, COMBINES SEVERAL PLATING SYSTEMS INTO ONE

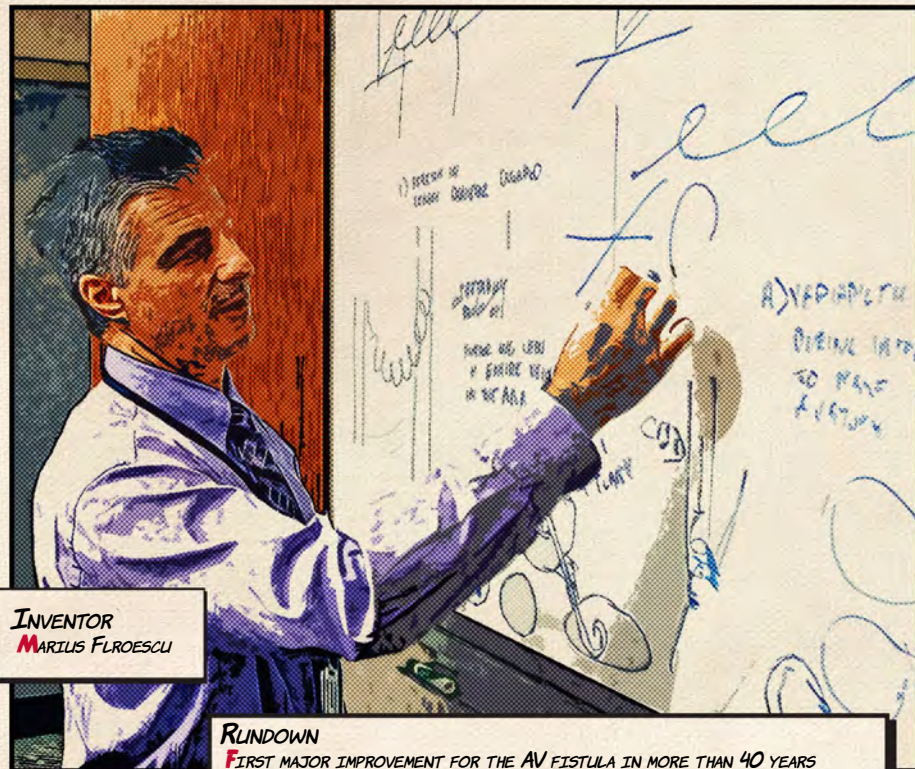
INVENTOR

DANIEL FIRESTONE



AV FISTULAS

DEVICE HELPS FISTULAS MATURE FASTER, BETTER, SAFER



INVENTOR

MARIUS FLORESCU

RUNDOWN

- F**IRST MAJOR IMPROVEMENT FOR THE AV FISTULA IN MORE THAN 40 YEARS
- M**EDICAL DEVICE THAT PROMOTES FISTULA MATURATION
- C**APABLE OF MATURING AV FISTULAS IN AN ANIMAL MODEL
- I**NEXPENSIVE, SINGLE USE
- M**ULTIPLE APPLICATIONS BEYOND FISTULA MATURATION

HEALTHCARE PROVIDERS NOW HAVE A BETTER, MORE RELIABLE WAY TO IMPROVE DIALYSIS IN PATIENTS WITH KIDNEY FAILURE.

HEMODIALYSIS SIMULATES KIDNEYS FUNCTION BY FILTERING A PATIENT'S BLOOD OUTSIDE THE BODY TO CLEANSE IT FROM TOXINS. FOR DIALYSIS TO WORK PROPERLY, DIALYSIS MACHINES MUST FILTER AS MUCH BLOOD AS POSSIBLE DURING EACH TREATMENT.

AN ARTERIOVENOUS OR AV FISTULA IS A POINT OF ENTRY AND EXIT TO THE BLOOD VESSELS THAT ALSO ALLOWS LARGE AMOUNTS OF BLOOD TO FLOW UNINTERRUPTED. THIS PORTAL SERVES AS A CONNECTION BETWEEN AN ARTERY AND A VEIN IN THE PATIENT'S ARM AND ALLOWS THE VEIN TO GROW LARGE AND STRONG PROVIDING RELIABLE ACCESS TO BLOOD VESSELS EACH TIME.

THE PROBLEM WITH CREATING AV FISTULAS IS THAT THEY REQUIRE WEEKS TO MONTHS TO DEVELOP, OR MATURE, AND STRENGTHEN BEFORE A PATIENT CAN UNDERGO HEMODIALYSIS. MANY PATIENTS UNDERGOING DIALYSIS ARE NEVER ABLE TO MATURE A LARGE FISTULA.

A BETTER, MORE RELIABLE WAY TO CREATE AV FISTULAS SEEMS LIKE A GOOD IDEA.

UNMC SURGEON AND THE 2014 EMERGING INVENTOR AWARDEE, MARIUS FLORESCU, M.D., HAS A NEW DEVICE THAT REPRESENTS THE FIRST MAJOR IMPROVEMENT FOR THE AV FISTULA IN MORE THAN 40 YEARS. HIS DEVICE PROMOTES BETTER AV FISTULA CREATION AND MATURATION FOR HEMODIALYSIS.

DR. FLORESCU ALSO MADE A CRITICAL DISCOVERY DURING HIS PROOF-OF-CONCEPT WORK: IDENTIFYING THE FIRST KNOWN ANIMAL MODEL IN WHICH AV FISTULAS CAN MATURE.

FEATURED TECHNOLOGIES

WIRELESSLY CONTROLLED MOTORS ENHANCE FUNCTIONALITY AND PREVENT MUSCLE FATIGUE

A NEW CYBORG PROSTHETIC ARM DESIGN BRINGS PROSTHETICS ONE STEP CLOSER TO REPLICATING ANATOMY.

TRADITIONAL ELECTRONICALLY-POWERED PROSTHESES HAVE TWO COMMON DOWNFALLS: WEIGHT AND A LACK OF MANUAL, BODY-POWERED CONTROL.

TO SOLVE THESE ISSUES, A RESEARCH TEAM AT UNO BIOMECHANICS DESIGNED A NOVEL PROSTHETIC ARM THAT INCORPORATES THE BEST OF BOTH WORLDS: IT HAS BOTH THE LIGHTWEIGHT FEEL OF A BODY-POWERED PROSTHETIC AND THE IMPROVED FUNCTIONALITY OF AN ELECTRONICALLY-POWERED DEVICE.

USING A BODY-POWERED PROSTHETIC BASE, THE HYBRID ARM STILL PROVIDES MANUAL CONTROL. MANUAL MOTOR CONTROL IS AN IMPORTANT FEATURE BECAUSE IT PERMITS THE DEVELOPMENT OF HEALTHY AND STRONG MUSCLES IN CHILDREN WHO WOULD NORMALLY ABANDON THE USE OF THEIR AFFECTED LIMB. THAT LEADS TO LONG-TERM WEAKNESS AND EVEN POSTURAL PROBLEMS SUCH AS SCOLIOSIS.

TO REDUCE WEIGHT AND ENHANCE EASE OF USE, FEWER (AND LIGHTER-WEIGHT) MOTORS ARE USED. RATHER THAN DEVELOPING ALL OF THE FORCE NEEDED TO GRIP OBJECTS, THE MOTORS IN THIS HYBRID DESIGN ARE INTENDED TO AUGMENT THE USER'S STRENGTH TO MAKE USING THE PROSTHETIC EASIER AND TO ENCOURAGE THEM TO USE THE STRENGTH THEY HAVE.



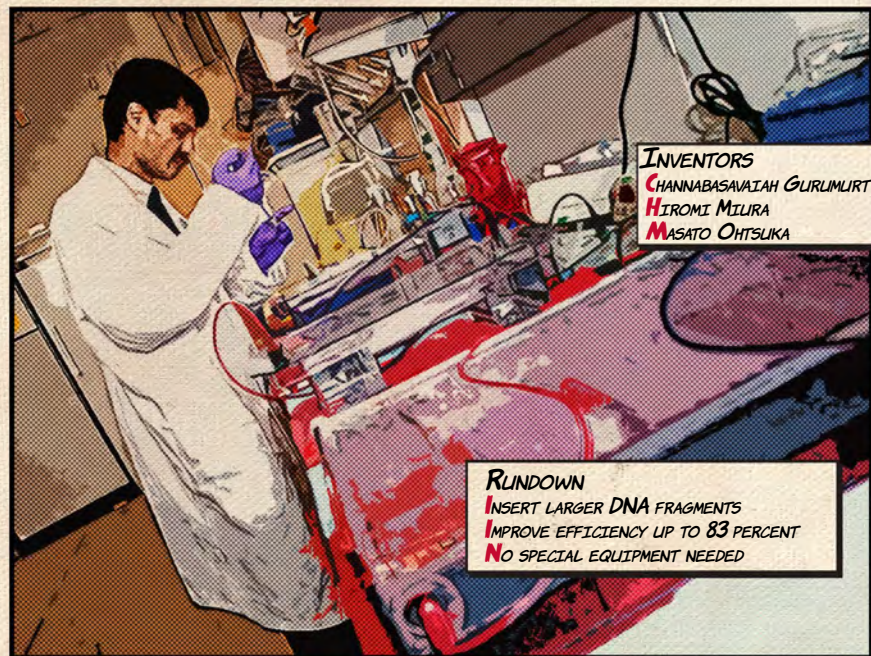
INVENTORS
JAMES PIERCE
JEAN PECK
JORGE ZUNIGA
RAKESH SRIVASTAVA
WALKER ARCE

RLINDOWN

LIGHTWEIGHT, ERGONOMIC
GRIP PRIMARILY CONTROLLED BY ELBOW OR SHOULDER FLEXION
GRIP STRENGTH ENHANCED OR EVEN MAINTAINED BY WIRELESSLY CONTROLLED MOTORS
REDUCES MUSCLE FATIGUE
INCREASES FUNCTIONALITY

EASI-CRISPR

GET MORE OUT OF CRISPR WITH NEW INSERTION PROTOCOL



INVENTORS
CHANNABASAVAIHAH GURUMURTHY
HIROMI MIURA
MASATO OHTSUKA

RLINDOWN

INSERT LARGER DNA FRAGMENTS
IMPROVE EFFICIENCY UP TO 83 PERCENT
NO SPECIAL EQUIPMENT NEEDED

THE DISCOVERY OF THE NEW GENE EDITING TECHNOLOGY, CRISPR, WAS A DREAM COME TRUE FOR SCIENTISTS EVERYWHERE. NEVER BEFORE COULD DNA BE CUT SO CLEANLY AND PRECISELY. BUT CRISPR ONLY SOLVES HALF THE PROBLEM.

WHILE CRISPR CAN DELETE A SPECIFIC SEGMENT OF MUTATED OR FAULTY DNA, THE PROCESS FOR REPLACING THAT PIECE HAS BEEN UNWIELDY, IMPRECISE AND VERY INEFFICIENT. IN SHORT, CRISPR IS THE PRECISION OF A LASER, WHILE CURRENT DNA INSERTION METHODS ARE CLOSER TO BLUDGEONS.

AN INTERNATIONAL COLLABORATION INVENTED A BETTER METHOD TO CAPITALIZE ON CRISPR'S STRENGTHS, WHILE DRAMATICALLY IMPROVING EFFICIENCY OF INSERTING NEW MATERIAL BY AS MUCH AS 400 PERCENT. THE UNIVERSITY OF NEBRASKA MEDICAL CENTER'S DR. CHANNABASAVAIHAH GURUMURTHY AND DRs. MASATO OHTSUKA AND HIROMI MIURA AT THE TOKAI UNIVERSITY SCHOOL OF MEDICINE IN JAPAN INVENTED THE PROTOCOL, WHICH HAS A REMARKABLY HIGH RATE OF EFFICIENCY (UP TO 100 PERCENT IN SOME GENETIC LOCI).

AS A RESEARCH TOOL, THE NEW PROTOCOL COULD HAVE A PROFOUND IMPACT IN DEVELOPING NEW GENETICALLY ENGINEERED MODEL ORGANISMS, INCLUDING ANIMALS, CELLS AND PLANTS, AND OTHER TESTING MEDIA THAT COULD LEAD TO FUTURE CURES OF GENETIC CONDITIONS.

FEATURED TECHNOLOGIES

AQUABLADE

ELIMINATE RISKS ASSOCIATED WITH OPEN-HEART SURGERIES

AQUABLADE, A NEW MEDICAL DEVICE INVENTED AT THE UNIVERSITY OF NEBRASKA MEDICAL CENTER AND UNeMed's MOST PROMISING NEW INVENTION OF 2014, COULD PROVIDE A LESS INVASIVE TREATMENT FOR CARDIOVASCULAR DISEASE AND ELIMINATE A SIGNIFICANT AMOUNT OF THE INHERENT RISKS ASSOCIATED WITH OPEN-HEART SURGERIES.

AQUABLADE IS AN INNOVATIVE SURGICAL INSTRUMENT THAT USES A CATHETER TO DELIVER A SPECIALIZED CUTTING TOOL THROUGH A PATIENT'S ARTERY WHERE IT USES A HIGH-PRESSURE WATER JET TO HELP REPAIR LIFE-THREATENING TEARS IN ARTERY WALLS. THE DEVICE COULD ALSO BE USED TO HELP REMOVE PREVIOUSLY DEPLOYED STENTS.

ARTERIAL TEARS IN THE INNER LINING OF AN ARTERY CAN LEAD TO THE FORMATION OF BLOOD CLOTS THAT OBSTRUCT BLOOD FLOW AND EVENTUALLY LEAD TO A HEART ATTACK OR STROKE. IF LEFT UNTREATED, AN ARTERIAL TEAR IS FATAL FOR 80 PERCENT OF PATIENTS.

CURRENT TREATMENTS FOR ARTERIAL TEARS OFTEN REQUIRE OPEN-HEART SURGERY, WHICH CARRIES A 25 PERCENT RISK OF DEATH AND AN EXTENDED RECOVERY PERIOD.

AQUABLADE ELIMINATES MOST OF THOSE RISKS WHILE ALSO MINIMIZING THE TIME OF RECOVERY. IT IS CURRENTLY AT THE CONCEPTUAL STAGE, PREPARING A FUNCTIONAL PROTOTYPE FOR PRECLINICAL TESTING.



INVENTORS

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RUNDOWN

TREATS AORTIC DISSECTION
REMOVES STENTS
LESS INVASIVE
FASTER PATIENT RECOVERY

NF-KB PATHWAY INHIBITOR

UNMC SCIENTISTS INVENT NEW COMPOUNDS TO TREAT CANCER



RUNDOWN

INHIBITS THE NF-KB PATHWAY
CAUSES DEGRADATION OF IKKα AND IKKβ
NANOMOLAR POTENCY IN CELL-BASED STUDIES

INVENTORS

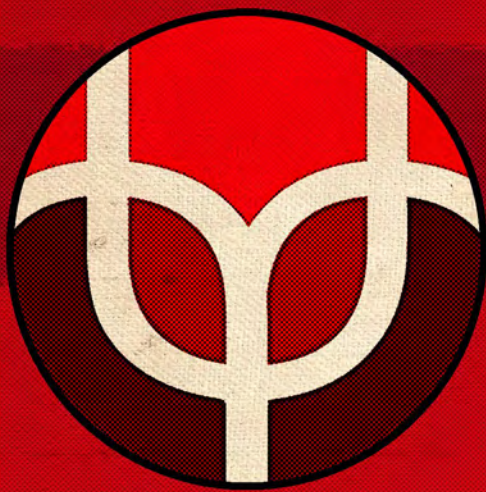
AMARNATH NATARAJAN
SANDEEP RANA

RESEARCHERS AT THE UNIVERSITY OF NEBRASKA MEDICAL CENTER CREATED A MOLECULE CAPABLE OF SPECIFICALLY INHIBITING THE NF-κB PATHWAY, A KEY TARGET INVOLVED IN A VARIETY OF CANCERS AND OTHER DISEASES.

THE NF-κB PATHWAY IS OFTEN OVERACTIVE IN A NUMBER OF CANCERS. THEREFORE, NEW WAYS TO SHUT OFF THIS PATHWAY COULD YIELD IMPORTANT NEW CANCER TREATMENTS.

AMARNATH NATARAJAN, PH.D., AND HIS TEAM DEVELOPED A SMALL MOLECULE CALLED 36-252 THAT DESTROYS KEY MEMBERS OF THE NF-κB PATHWAY—SPECIFICALLY THE PROTEINS IKKβ AND IKKα. IN OVARIAN CANCER CELL STUDIES, 36-252 EFFECTIVELY INHIBITED CELL GROWTH AT NANOMOLAR CONCENTRATIONS, STIMULATED CELL DEATH (APOPTOSIS), AND EFFECTIVELY INHIBITED NF-κB ACTIVITY. 36-252 WAS ALSO EFFECTIVE AT DESTROYING OVARIAN CANCER STEM-LIKE CELLS.

UNeMed IS INTERESTED IN FORMING COLLABORATIONS WITH INDUSTRY TO FURTHER EXPLORE THE POTENTIAL OF 36-252 AS A NOVEL THERAPY OF THE TREATMENT OF CANCER AND OTHER DISEASES ASSOCIATED WITH OVERACTIVE NF-κB.



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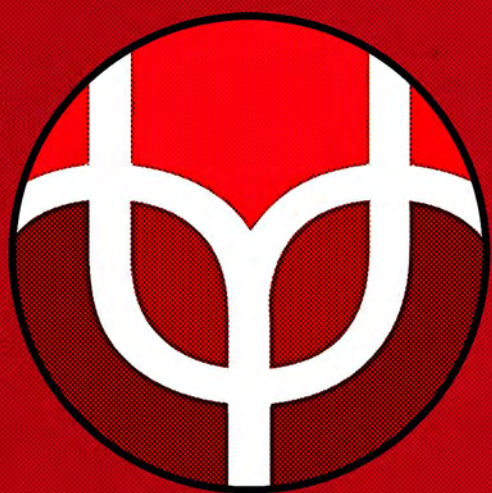


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