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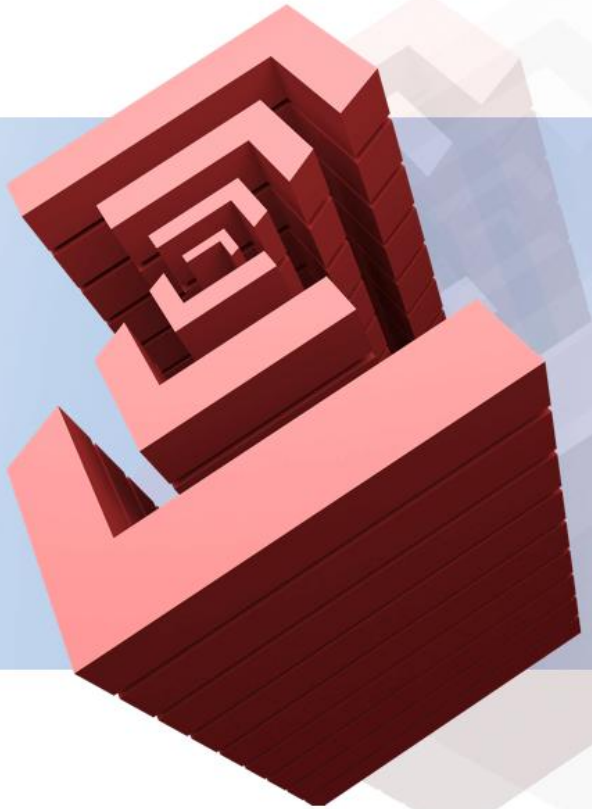

科技信息检索与利用

第五讲2

宋秀芳

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主要内容

图片表格

实验方法

基金信息

一、图表检索


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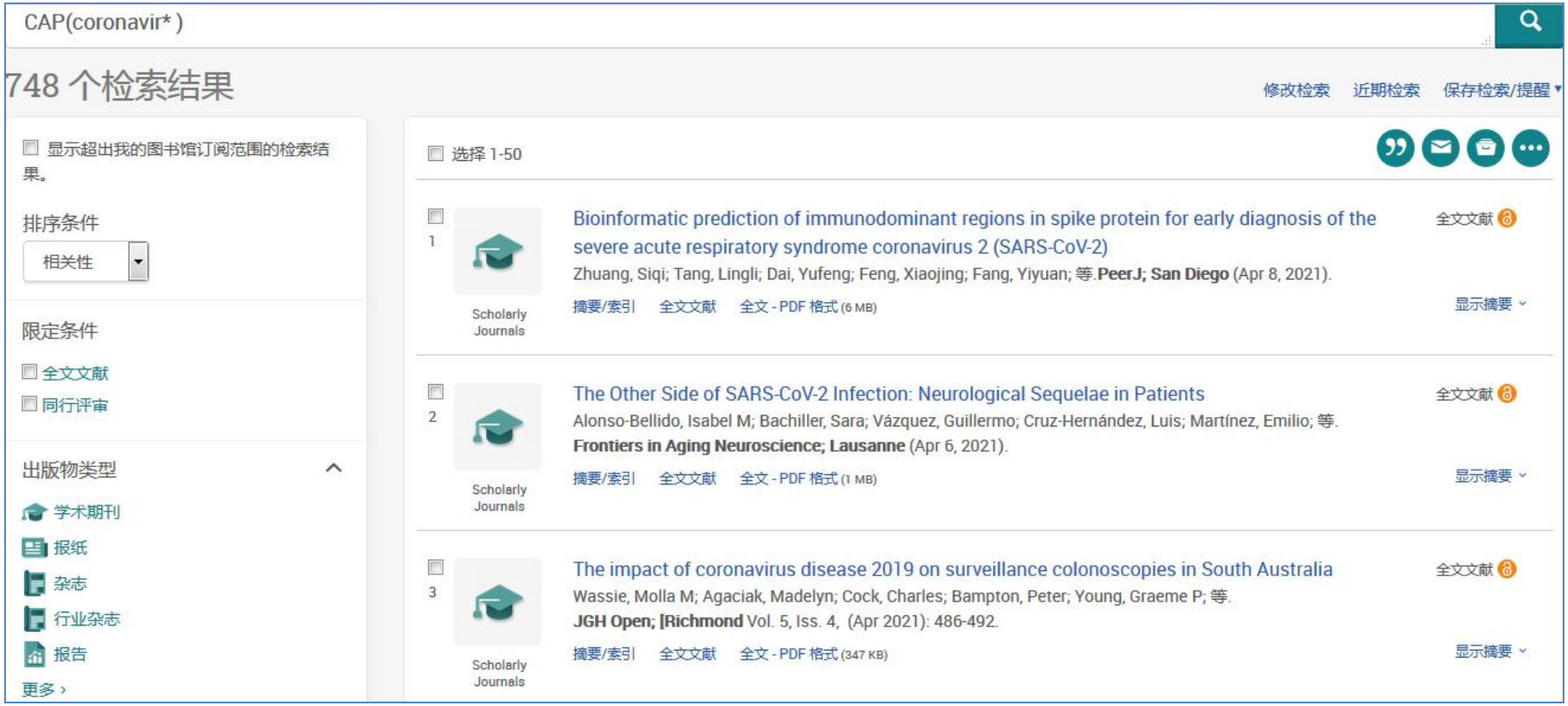
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Scholarly Journals
Bioinformatic prediction of immunodominant regions in spike protein for early diagnosis of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)
Zhuang, Siqi; Tang, Lingli; Dai, Yufeng; Feng, Xiaojing; Fang, Yiyuan; 等.PeerJ; San Diego (Apr 8, 2021).
摘要/索引 全文文献 全文 - PDF 格式 (6 MB)
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2
Scholarly Journals
The Other Side of SARS-CoV-2 Infection: Neurological Sequelae in Patients
Alonso-Bellido, Isabel M; Bachiller, Sara; Vázquez, Guillermo; Cruz-Hernández, Luis; Martínez, Emilio; 等.
Frontiers in Aging Neuroscience; Lausanne (Apr 6, 2021).
摘要/索引 全文文献 全文 - PDF 格式 (1 MB)
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3
Scholarly Journals
The impact of coronavirus disease 2019 on surveillance colonoscopies in South Australia
Wassie, Molla M; Agaciak, Madelyn; Cock, Charles; Bampton, Peter; Young, Graeme P; 等.
JGH Open; [Richmond Vol. 5, Iss. 4, (Apr 2021): 486-492.
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二、实验方法查找

Wiley在线实验室指南

Springer Protocols 生物医学

Nature Protocols

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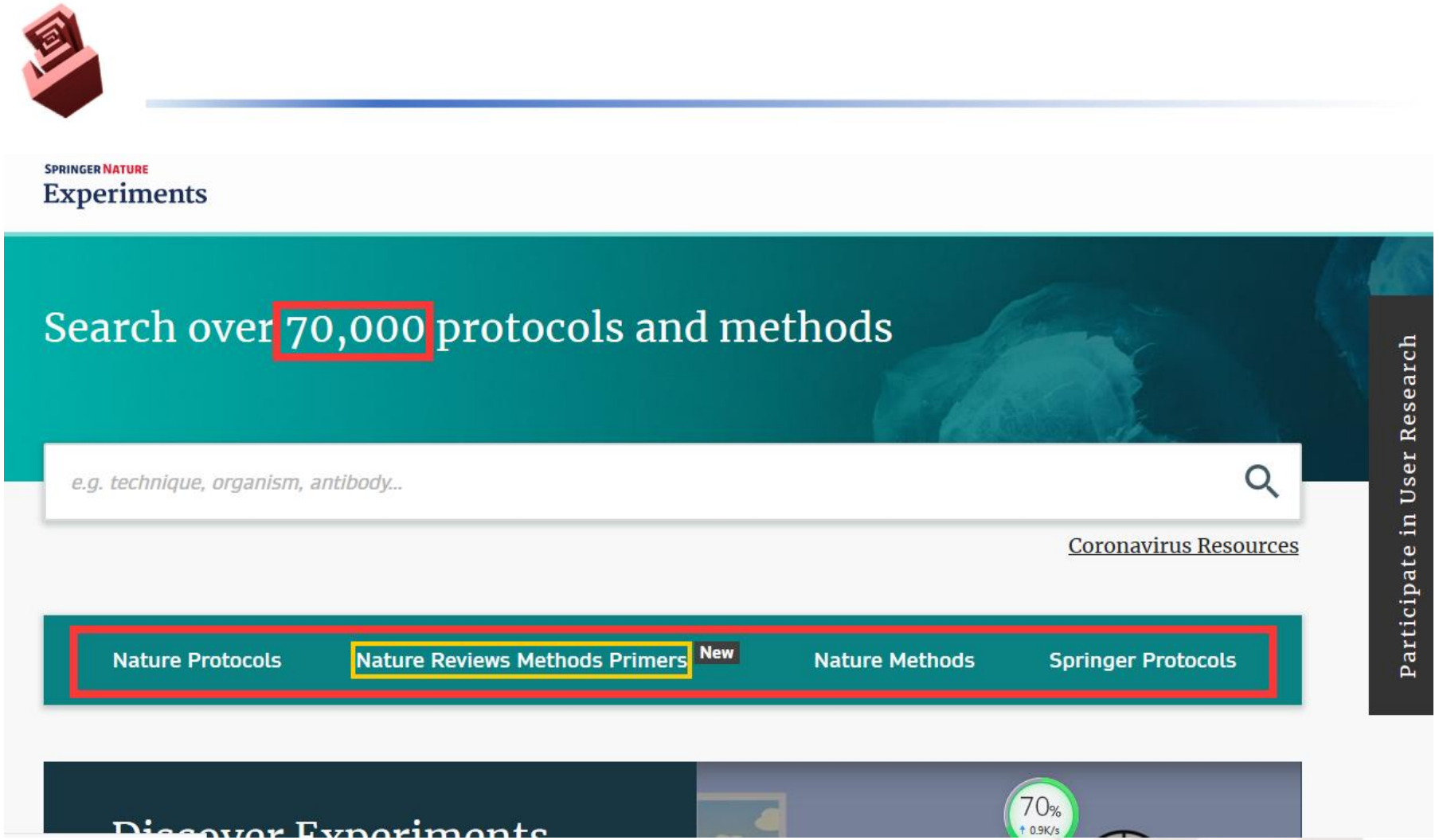
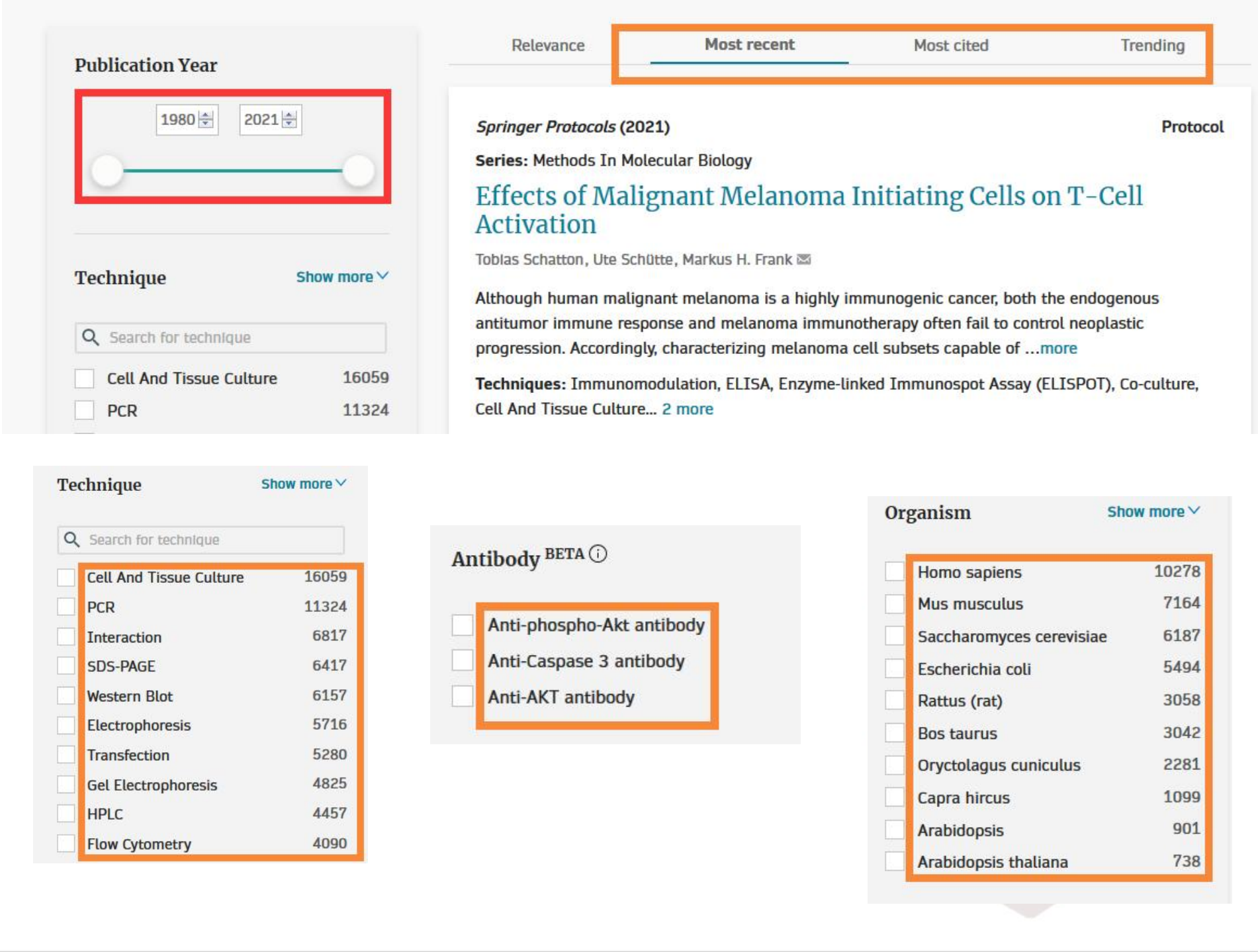


Springer Protocols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Protocol
Series: Methods In Molecular Biology
Effects of Malignant Melanoma Initiating Cells on T-Cell Activation
Tobias Schatton, Ute Schütte, Markus H. Frank
Although human malignant melanoma is a highly immunogenic cancer, both the endogenous antitumor immune response and melanoma immunotherapy often fail to control neoplastic progression. Accordingly, characterizing melanoma cell subsets capable of ...more
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Arabidopsis 901
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2021

Selective Regional Isolation of Brain Microvessels

Authors:
Fernanda Medina-Flores [1,2], Gabriela Hurtado-Alvarado [2], Beatriz Gómez-González [2]

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Abstract

The study of the regionalized function of the blood-brain barrier at the level of brain endothelial cells and pericytes is essential to understand the biological properties and molecular mechanisms regulating this biological barrier. The isolation of blood vessels from specific brain regions will allow to understand regional differences in susceptibility to pathological phenomena such as ischemia, traumatic brain injury, and neurodegenerative diseases, such as Alzheimer disease. Here, we propose an efficient and fast method to isolate brain endothelial cells and pericytes from a specific cerebral region. The isolated brain endothelial cells and pericytes are viable to perform conventional molecular and histological techniques such as Western blots, immunocytofluorescence, and scanning electron microscopy. less

Methods in Molecular Biology
DOI 10.1007/7651_2020_313

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Selective Regional Isolation of Brain Microvessels

Fernanda Medina-Flores, Gabriela Hurtado-Alvarado, and Beatriz Gómez-González

Abstract

The study of the regionalized function of the blood-brain barrier at the level of brain endothelial cells and pericytes is essential to understand the biological properties and molecular mechanisms regulating this biological barrier. The isolation of blood vessels from specific brain regions will allow to understand regional differences in susceptibility to pathological phenomena such as ischemia, traumatic brain injury, and neurodegenerative diseases, such as Alzheimer disease. Here, we propose an efficient and fast method to

2 Materials

Prepare fresh solutions with ultrapure water at room temperature. Filter the solutions, and then store them at the corresponding temperature indicated below.

2.1 Solutions for Brain Blood Vessel Isolation

溶液配制

1. 5× PBS solution: Weigh 40.03 g NaCl, 1.01 g KCl, 7.2 g Na_2HPO_4, and 1.2 g KH_2PO_4, and transfer them to a 1 L beaker. Add 800 mL ultrapure water to the cylinder, mix with a magnetic stir bar, and adjust pH to 7.4 with a solution of 0.3 M HCl (pH 0.13) or 0.5 M NaOH (pH 13.6). Make up to 1 L with ultrapure water and mix. Store at 4 °C.
2. 1× PBS solution: Add 200 mL of 5× PBS solution to the 1 L beaker. Add 600 mL of ultrapure water, mix, and adjust pH to 7.4 with a solution of 0.3 M HCl or 0.5 M NaOH. Make up to 1 L with water; mix with a magnetic stir bar. Filter the solution

3 Methods

3.1 Blood Vessel Isolation from Selective Brain Regions

操作步骤

1. Dissection instruments must be cleaned and placed in tic solution diluted in water 1:1000 to sterilize for 1 h temperature.
2. Add 1.5 mL 1% BSA solution to each 1.5 mL conical micro tube, and store over night at 4 °C. This avoids the attachment of microvessels to the walls of the microtubes.
3. Discard the 1% BSA solution from microtubes by decantation. Add 1 mL of SB to the microtube, and maintain it on ice during the experiment.
4. Obtain the head of one euthanized rat, and immediately place it on ice (*see* **Note 4**).
5. Use large scissors to remove the skin that is on top of the skull. Next, use dental extracting forceps to remove the skull, begin by carefully introducing the forceps tip on the foramen mag-

4 Notes

注意事项

1. The volume of the solution depends on the number of samples you will work with; 100 mL of 1% BSA solution and sucrose buffer are sufficient to process two brain regions from six rat brains.
2. The avidin-biotin complex solution must be prepared and stored at 4 °C 30 min before using it.
3. Osmium tetroxide is extremely toxic; use coat, gloves, and goggles to prepare it in a lab extraction hood.
4. The euthanasia method does not modify the viability of brain microvessels. Animals may be euthanized by anesthesia overdose (e.g., with sodium pentobarbital) or by any other accepted method for rats. Consider obtaining the tissue quickly as possible, and process it immediately.
5. To dissect the cerebral cortex, use iris scissors, and carefully cut horizontally to the brain surface a piece of 1.5 cm long and 3 mm depth for each hemisphere. To dissect the hippocampus, remove the debris from the cerebral cortex with medium ser-

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3. Armulik A, Abramsson A, Betsholtz C (2005) Endothelial/pericyte interactions. Circ Res 97 (6):512–523. https://doi.org/10.1161/01.RES.0000182903.16652.d7
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6. Hamilton NB (2010) Pericyte-mediated regulation of capillary diameter: a component of neurovascular coupling in health and disease. Front Neuroenerg 2:2. https://doi.org/10.3389/fnene.2010.00005
7. Sweeney MD, Sagare AP, Zlokovic BV (2018) Blood–brain barrier breakdown in Alzheimer disease and other neurodegenerative disorders. Nat Rev Neurosci 14(3):133–150. https://doi.org/10.1038/nrneurol.2017.188
8. Winkler EA, Bell RD, Zlokovic BV (2011) Central nervous system pericytes in health and disease. Nat Neurosci 14(11):1398–1405. https://doi.org/10.1038/nn.2946

nature protocols

Featured

Protocol
25 Sept 2020

Quantification of SARS-CoV-2 neutralizing antibody by a pseudotyped virus-based assay

The production and titration of the SARS-CoV-2 S pseudotyped virus using a VSV-based pseudovirus production system in this protocol enable its use under biosafety level 2 conditions as well as in a neutralization assay to assess the level of neutralizing antibodies or molecular inhibitors in a sample.

Jianhui Nie, Qianqian Li ... Youchun Wang

Protocol Extension
09 Apr 2021

Assessing biofilm inhibition and immunomodulatory activity of small amounts of synthetic host defense peptides synthesized using SPOT-array technology

Here, we present a protocol for high-throughput screening of SPOT-peptide arrays to assess the antibiofilm, antimicrobial and immunomodulatory activities of synthetic peptides.

Hashem Etayash, Evan F. Haney & Robert E. W. Hancock

Protocol
12 Apr 2021

Fabrication, characterization and application

This protocol describes how to fabricate graphene electronic tattoos (GE
GETs can be used for a variety of applications, including wearables, persc

Current issue ›

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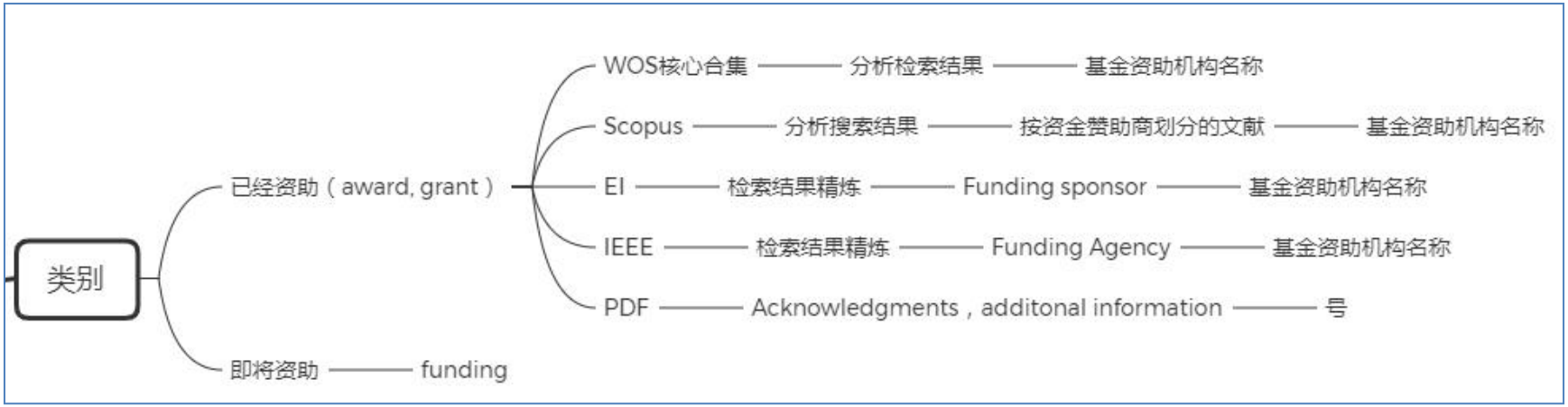
Ana Luisa Rodrigues Toste de Carvalho, Hsiao-Yun Liu ... Hans-Willem Snoeck
Protocol Extension | 01 Mar 2021

Infection of zebrafish larvae with human norovirus and evaluation of the in vivo efficacy of small-molecule inhibitors

Jana Van Dycke, Arno Cuvry ... Joana Rocha-Pereira
Protocol Extension | 09 Apr 2021

三、基金信息检索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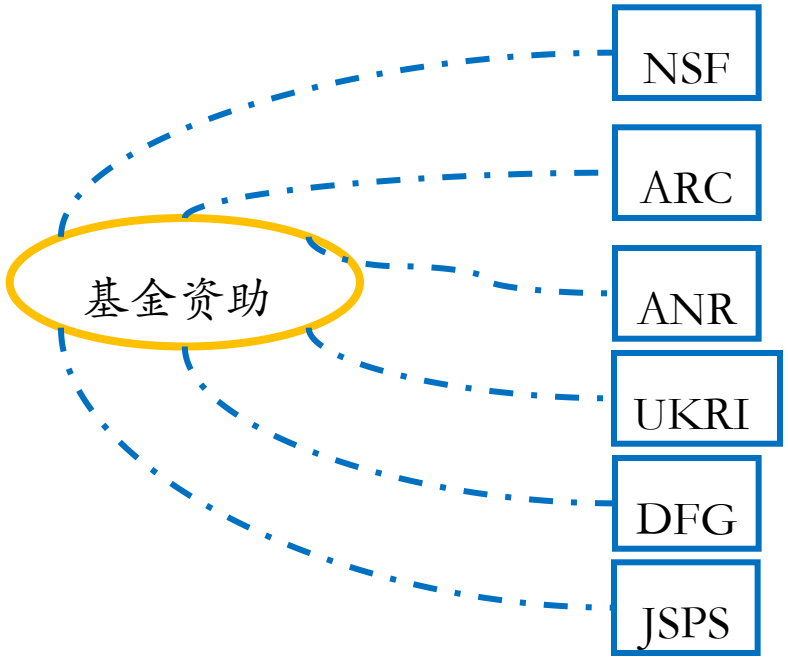
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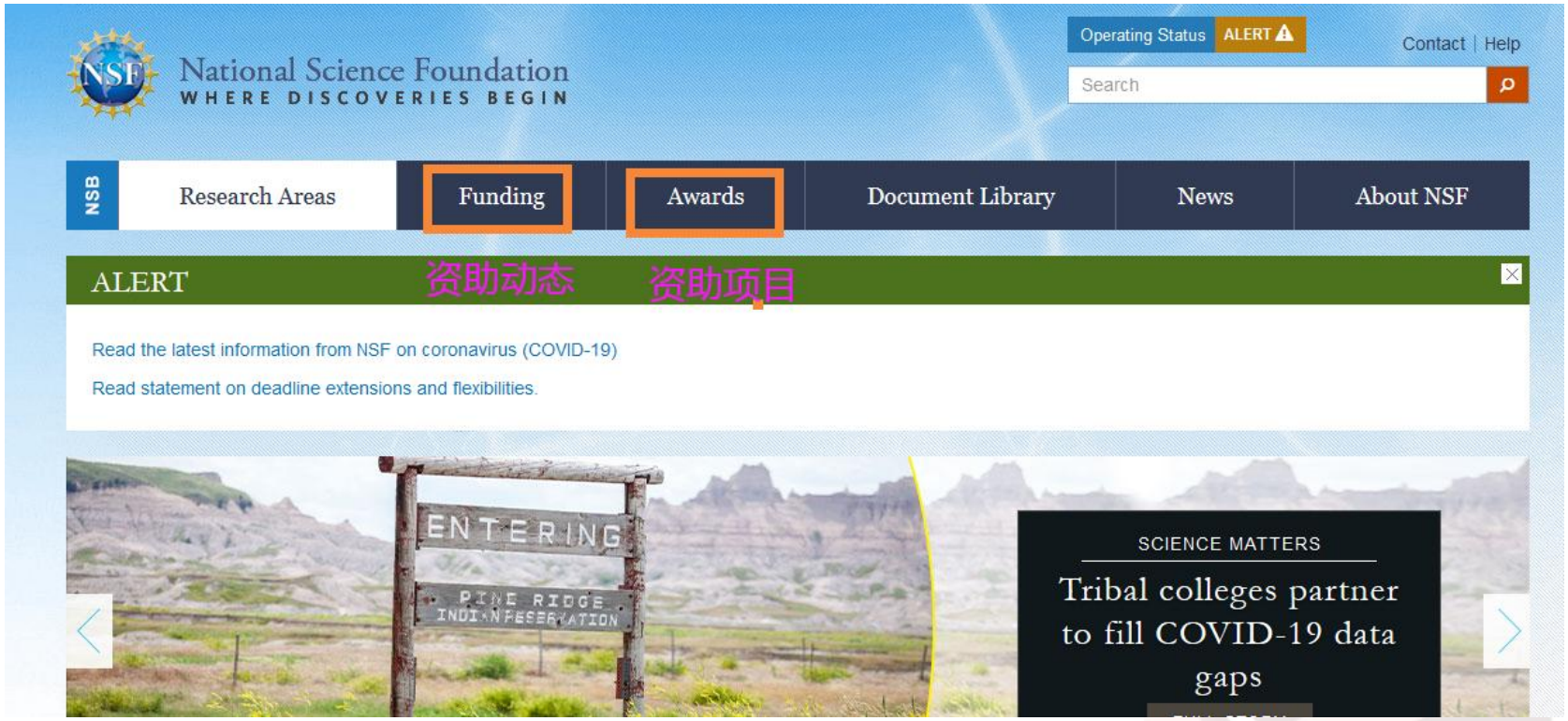
（一）美国国家科学基金

1、NSF 主页



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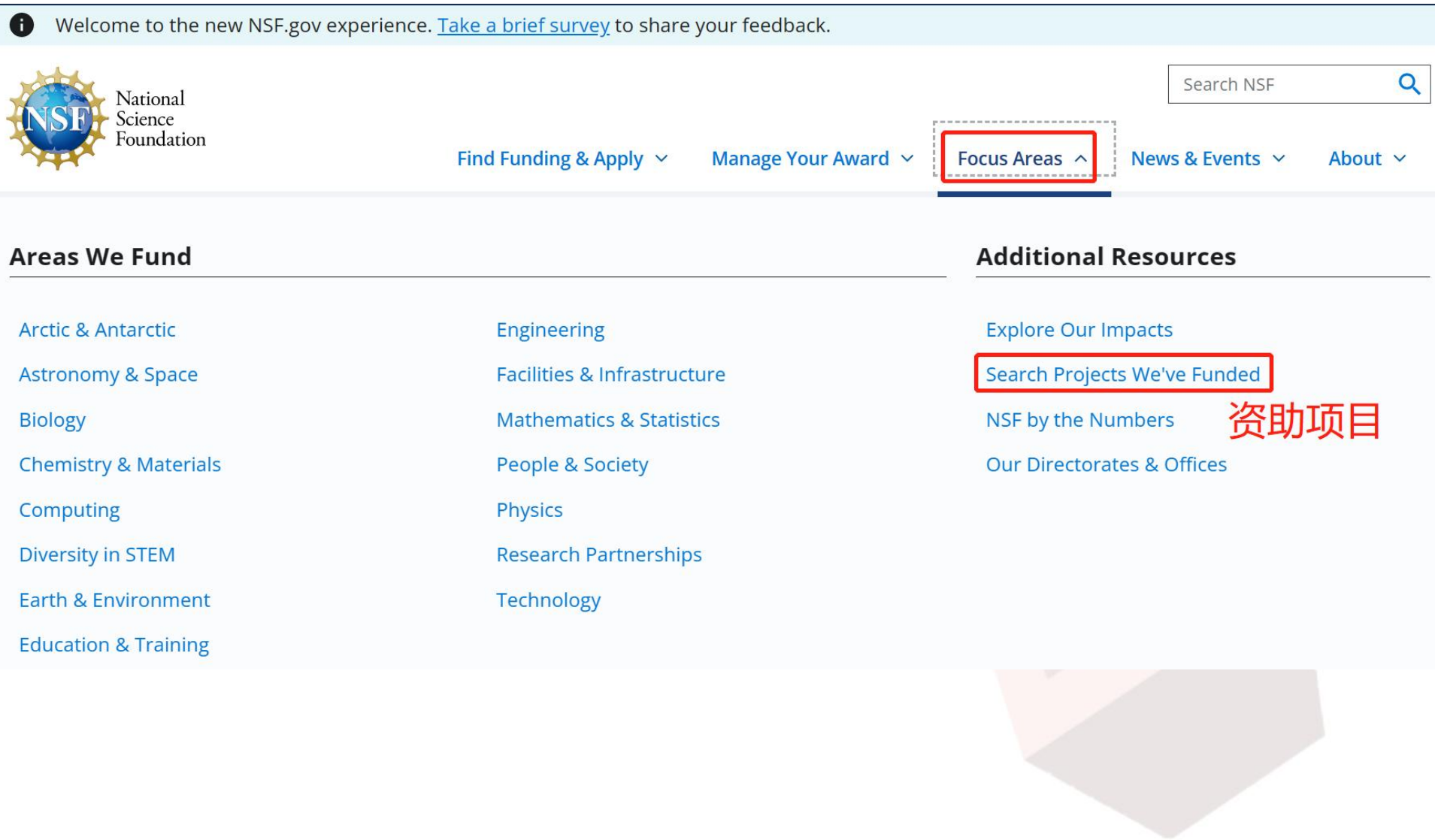

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Program Information

NSF Organization — Select one

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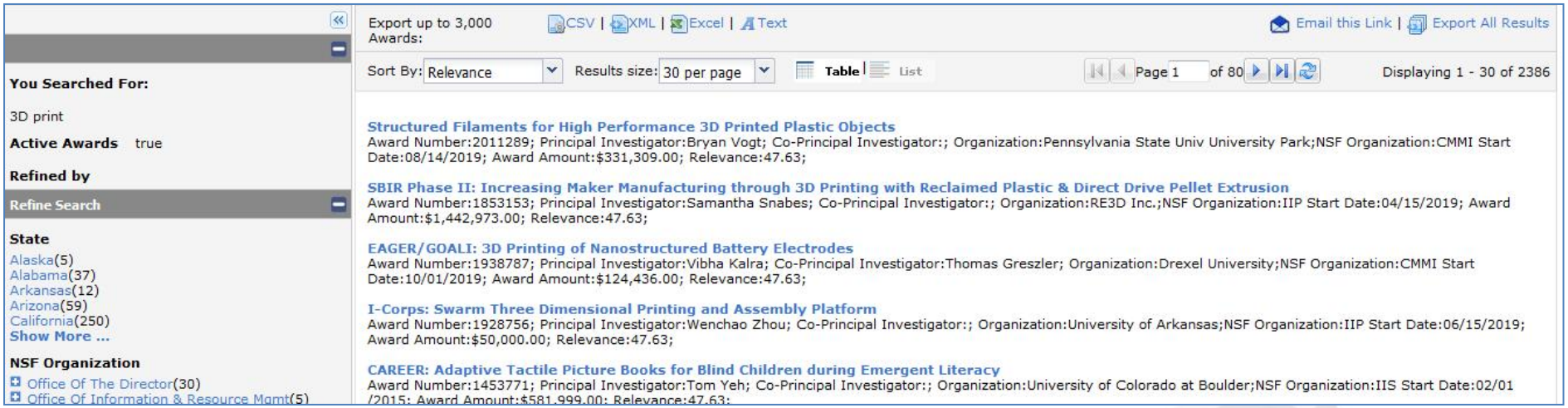

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Structured Filaments for High Performance 3D Printed Plastic Objects
Award Number:2011289; Principal Investigator:Bryan Vogt; Co-Principal Investigator:; Organization:Pennsylvania State Univ University Park;NSF Organization:CMMI Start Date:08/14/2019; Award Amount:$331,309.00; Relevance:47.63;

SBIR Phase II: Increasing Maker Manufacturing through 3D Printing with Reclaimed Plastic & Direct Drive Pellet Extrusion
Award Number:1853153; Principal Investigator:Samantha Snabes; Co-Principal Investigator:; Organization:RE3D Inc.;NSF Organization:IIP Start Date:04/15/2019; Award Amount:$1,442,973.00; Relevance:47.63;

EAGER/GOALI: 3D Printing of Nanostructured Battery Electrodes
Award Number:1938787; Principal Investigator:Vibha Kalra; Co-Principal Investigator:Thomas Greszler; Organization:Drexel University;NSF Organization:CMMI Start Date:10/01/2019; Award Amount:$124,436.00; Relevance:47.63;

I-Corps: Swarm Three Dimensional Printing and Assembly Platform
Award Number:1928756; Principal Investigator:Wenchao Zhou; Co-Principal Investigator:; Organization:University of Arkansas;NSF Organization:IIP Start Date:06/15/2019; Award Amount:$50,000.00; Relevance:47.63;

CAREER: Adaptive Tactile Picture Books for Blind Children during Emergent Literacy
Award Number:1453771; Principal Investigator:Tom Yeh; Co-Principal Investigator:; Organization:University of Colorado at Boulder;NSF Organization:IIS Start Date:02/01/2015; Award Amount:$581,999.00; Relevance:47.63;

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etween $100,001 - $500,000(1541)
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Award Number	Title 资助标题	NSF Organization	Programs 所属项目	Start Date	Principal Investigator	Co-Principal Investigator	State	Organization	Awarded Amount To Date	Program Officer
2011289	Structured Filaments for High Performance 3D Printed Plastic Objects	CMMI	Special Initiatives , Materials Eng. & Processing	08/14/2019	Vogt, Bryan		PA	Pennsylvania State Univ University Park	$331,309.00	Andrew Wel
1853153	SBIR Phase II: Increasing Maker Manufacturing through 3D Printing with Reclaimed Plastic & Direct Drive Pellet Extrusion	IIP	SBIR Phase II	04/15/2019	Snabes, Samantha		PR	RE3D Inc.	$1,442,973.00	Rajesh Meh
1938787	EAGER/GOALI: 3D Printing of Nanostructured Battery Electrodes	CMMI	AM-Advanced Manufacturing , GOALI-Grnt Opp Acad Lia wIndus	10/01/2019	Kalra, Vibha	Greszler, Thomas;	PA	Drexel University	$124,436.00	Khershed Cooper
1928756	I-Corps: Swarm Three Dimensional Printing and Assembly Platform	IIP	I-Corps	06/15/2019	Zhou, Wenchao		AR	University of Arkansas	$50,000.00	Ruth Shuma
1453771	CAREER: Adaptive Tactile Picture Books for Blind Children during Emergent Literacy	IIS	HCC-Human-Centered Computing	02/01/2015	Yeh, Tom		CO	University of Colorado at Boulder	$581,999.00	Ephraim Glinert
1829664	SBIR Phase II: Simulation for structural integrity of as manufactured 3D printed parts	IIP	SBIR Phase II	10/01/2018	Adams, Brady		WY	Teton Composites	$1,418,740.00	Peter Atherton
1815585	CHS: Small: Collaborative Research: 3D Printing for High Fidelity Image Reproduction Capturing Texture, Spectral	IIS	HCC-Human-Centered Computing	09/01/2018	Matusik, Wojciech		MA	Massachusetts Institute of Technology	$250,000.00	Ephraim Glinert

4、资助详细信息

Award Abstract # 2011289
Structured Filaments for High Performance 3D Printed Plastic Objects

NSF Org:	CMMI Div Of Civil, Mechanical, & Manufact Inn
Awardee:	PENNSYLVANIA STATE UNIVERSITY, THE
Initial Amendment Date:	December 30, 2019
Latest Amendment Date:	June 26, 2020
Award Number:	2011289
Award Instrument:	Standard Grant
Program Manager:	Andrew Wells awells@nsf.gov (703)292-7225 CMMI Div Of Civil, Mechanical, & Manufact Inn ENG Directorate For Engineering
Start Date:	August 14, 2019
End Date:	July 31, 2022 (Estimated)
Total Intended Award Amount:	¥276,309.00
Total Awarded Amount to Date:	$331,309.00
Funds Obligated to Date:	FY 2018 = ¥276,309.00 FY 2020 = ¥55,000.00
History of Investigator:	Bryan Vogt (Principal Investigator) bdv5051@psu.edu (814)863-5459

Awardee Sponsored Research Office:	Pennsylvania State Univ University Park 201 Old Main CENTRE, University Park, PA US 16802-1503 (814)865-1372
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ABSTRACT

This grant will support research that will contribute new fundamental knowledge related to the design of the feedstock for one common method of 3D printing to provide guidance for improved plastic parts to enable the translation from rapid prototyping to manufacture. Additive manufacturing generates near net shape object of virtually any shape from a digital computer model and is critical to the development of new manufacturing approach essential for the national productivity. Additive manufacturing is commonly called 3D printing and offers revolutionary possibilities in terms of massive customization for the individual consumer, so the fit is ergonomically perfect. However, almost all additive manufacturing processes for plastic parts lead to inherent weaknesses in the parts that make them inferior to traditionally manufactured plastics. This grant supports fundamental research to provide needed knowledge for the development of improved performance of additive manufactured plastic parts through scalable changes in the feedstock for one type of 3D printing called fused filament fabrication. The new materials will be compatible with existing printers, including consumer printers that are available to the general public, but will enable significant improvements in obtaining parts that better match the desired dimensions and with improved toughness. Additive manufacture of plastic parts is growing with applications from healthcare to assist doctors with planning surgery and custom implants for craniofacial restoration to aerospace parts to decrease the weight of non-critical components. Through improving the performance of plastic parts, this research will benefit the U.S. economy and society by extending the potential applications for additively manufactured plastic parts. This research involves several disciplines including manufacturing, materials science, and mechanical engineering, which will provide a unique educational experience for the students involved in this research. Additionally, the materials produced will be compatible with many commercial 3D printers, including those found in some K-12 schools, so outreach to these schools will provide the students with an opportunity to learn about additive manufacturing and design of materials with a hands-on approach.

The design of structured filaments is hypothesized to overcome the intrinsic trade-off between mechanical properties and dimensional accuracy associated with extrusion-based polymer additive manufacturing. Generally, there is poor interlayer strength during the print as the interdiffusion of polymer chains is limited by the temperature and increasing the printing temperature leads to flow and deformation of the printed part. This research seeks to overcome this trade-off with a core-shell structure to the feedstock filament, where the core provides mechanical reinforcement to inhibit flow, while the shell solidifies at lower temperature to provide interlayer strength. However, the fundamental requirements associated with the materials selection and the print processing are poorly understood for the core-shell materials in additive manufacturing. This research will fill the knowledge gap on the relationships between solidification temperature, mechanical properties and miscibility of the core and shell polymers through systematic experimental investigation. The research team will establish relationships between process parameters, intrinsic material properties of the polymers, the dimensional accuracy of the printed part, and mechanical properties to provide insights into the limitations of extrusion-based additive manufacturing for plastic objects.

This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.

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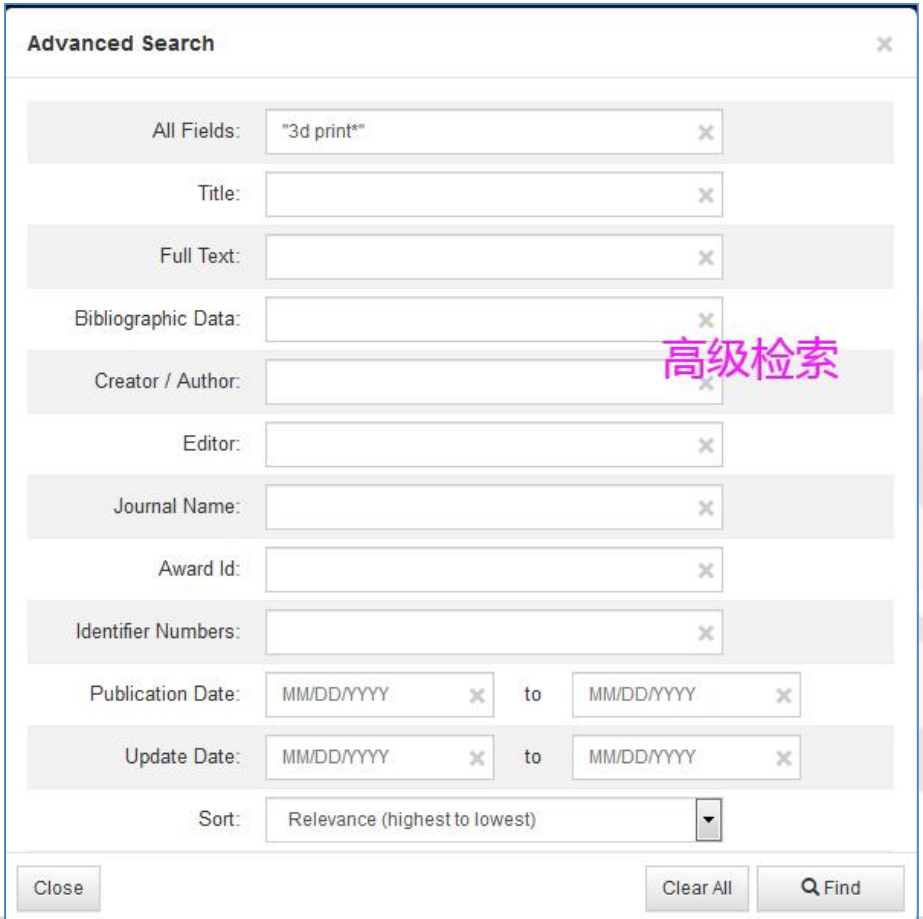
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Bhanvadia, Aftab A. ; Farley, Richard T. ; Noh, Youngwook ; Nishida, Toshikazu (December 2023 , Scientific Reports)

Abstract Micrometer scale arbitrary hollow geometries within a solid are needed for a variety of applications including microfluidics, thermal management and metamaterials. A major challenge to 3D **print**ing hollow geometries using stereolithography is the ability to retain empty spaces in between the solidified regions. In order to prevent unwanted polymerization of the trapped resin in the hollow spaces—known as **print**-through—significant constraints are generally imposed on the primary process parameters such as resin formulation, exposure conditions and layer thickness. Here, we report on a stereolithography process which substitutes the trapped resin with a UV blocking liquid to mitigate **print**-through. We investigate the mechanism of the developed process and determine guidelines for the formulation of the blocking liquid. The reported method decouples the relationship between the primary process parameters and their effect on **print**-through. Without having to optimize the primary process parameters to reduce **print**-through, hollow heights that exceed the limits of conventional stereolithography can be realized. We demonstrate fabrication of a variety of complex hollow geometries with cross-sectional features ranging from tens of micrometer to hundreds of micrometers in size. With the framework presented, this method may be employed for 3D **print**ing functional hollow geometries for a variety of applications, and more »

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