WEBINAR (Recorded)

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NSF 23-039

Dear Colleague Letter: MPS-NCI SuPporting new AReas of Knowledge (SPARK): Cancer as a Living Material – New Ideas and New Connections

https://www.nsf.gov/pubs/2023/nsf23039/nsf23039.jsp

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January 25, 2023

MPS-NCI SPARK - Webinar Outline

- *General Welcome*
- *Webinar Logistics*
- *Charge*
  - *Linda Sapochak (DMR/NSF)*
  - *Jennifer Couch (DCB/NCI)*
  - *Nastaran Zahir (CCT/NCI)*
- *Context Setting*
- *DCL Review*
  - *Eric M. Johnson Chavarria (NCI)*
    - eric.johnsonchavarria@nih.gov
  - *Shadi Mamaghani (NSF)*
    - smamagha@nsf.gov
- *Q&A Panel Discussion*

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MPS-NCI SPARK - Webinar Logistics

- *Webinar will be **recorded** and posted.*
- ***Chat** is open for attendees to share.*
- *Attendee mic/camera are muted.*
- *Use the **Q&A button** at the bottom of your Zoom to post your questions.*
- *You can adjust your view of the speakers and slides using the Zoom view button in the upper right.*
- *The compiled registration information will be shared with all the attendees.*

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MPS-NCI Working Group

- *NSF, Mathematical and Physical Sciences (MPS)*
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  - *Shadi Mamaghani*
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  - *Linda Sapochak*
- *NCI, Center of Cancer Training (CCT)*
  - *Nastaran Zahir*
  - *Oliver Bogler*
- *NCI, Division of Cancer Biology (DCB)*
  - *Steven Becker*
  - *Eric M. Johnson Chavarria*
    - eric.johnsonchavarria@nih.gov
  - *Jennifer Couch*

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MPS-NCI SPARK – Cancer as a Living Material

Linda Sapochak, Ph.D.

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Division of Materials Research (DMR),
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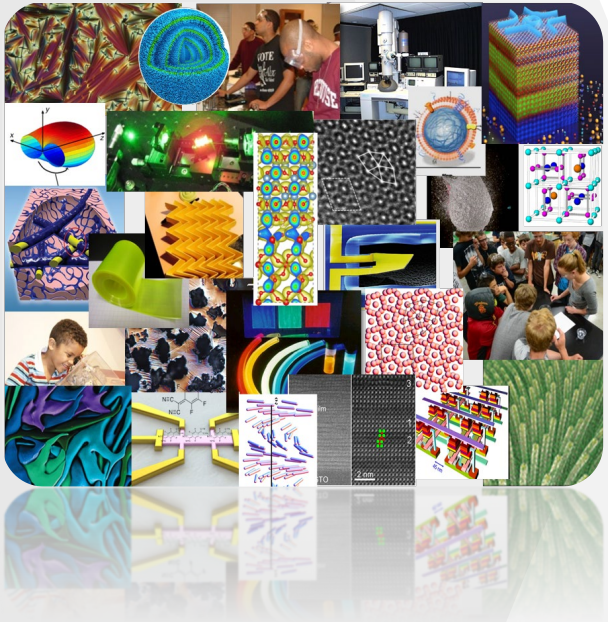

MPS-NCI SPARK – Cancer as a Living Material

Jennifer Couch, Ph.D.

Chief, Structural Biology and Molecular Applications Branch, National Cancer Institute (NCI),

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MPS-NCI SPARK – Cancer as a Living Material

Nastaran Zahir, Ph.D.

Chief, Cancer Training Branch
Center for Cancer Training (CCT),
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MPS-NCI SPARK – Cancer as a Living Material: Context Setting

Germano Iannacchione, Ph.D.

Expert
Division of Materials Research (DMR),
Directorate Mathematical and Physical Sciences (MPS),
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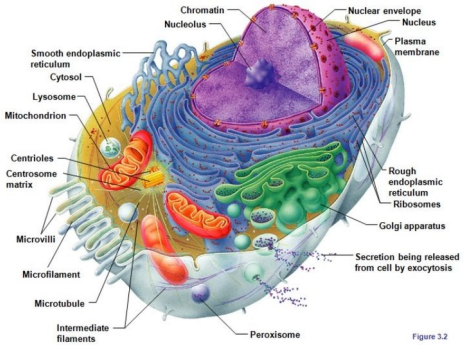
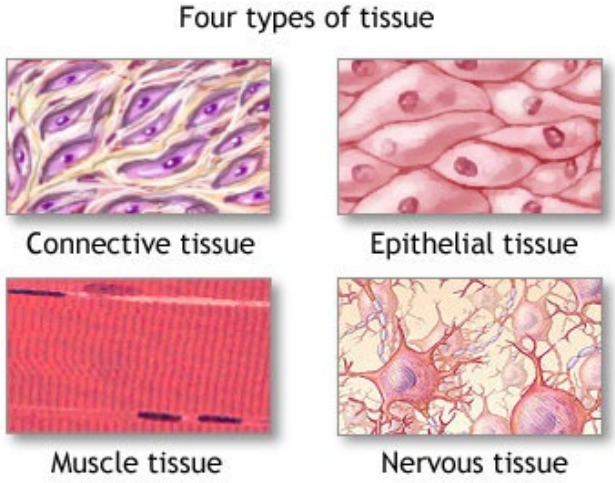
Context Setting: Goal

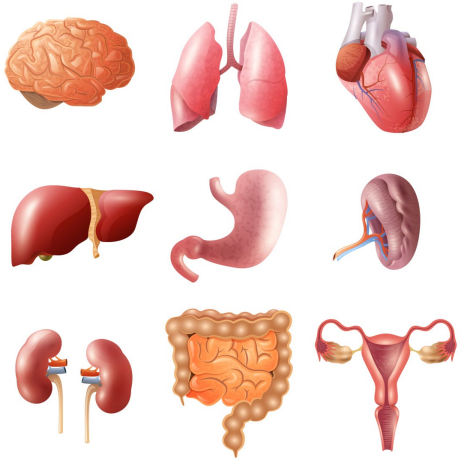
Purpose is to review and highlight some of the interesting connections between **cancer** and **living materials**

Context Setting: Biology

From cell to tissue to organs







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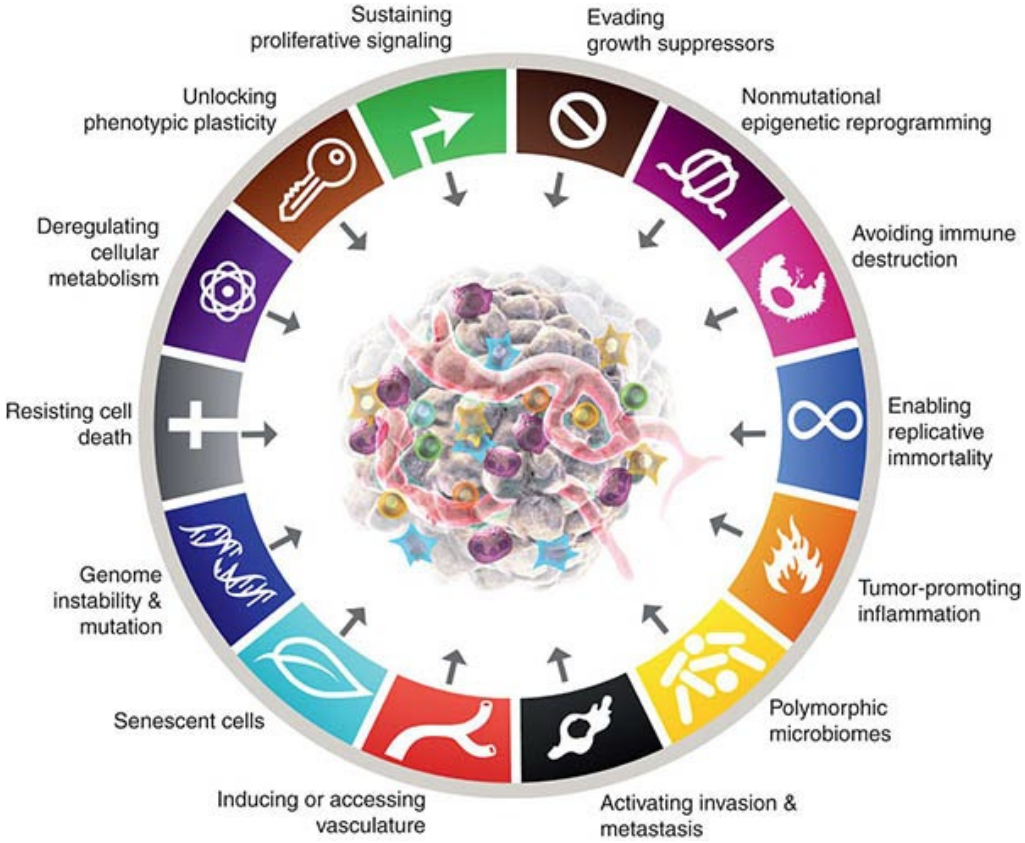
Context Setting: Cancer

Cancer a generic term that refers to <u>many diseases</u>: depending on which cells of the body grow uncontrollably and spread.



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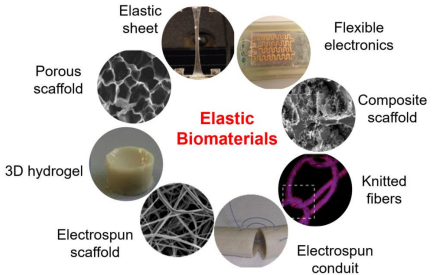
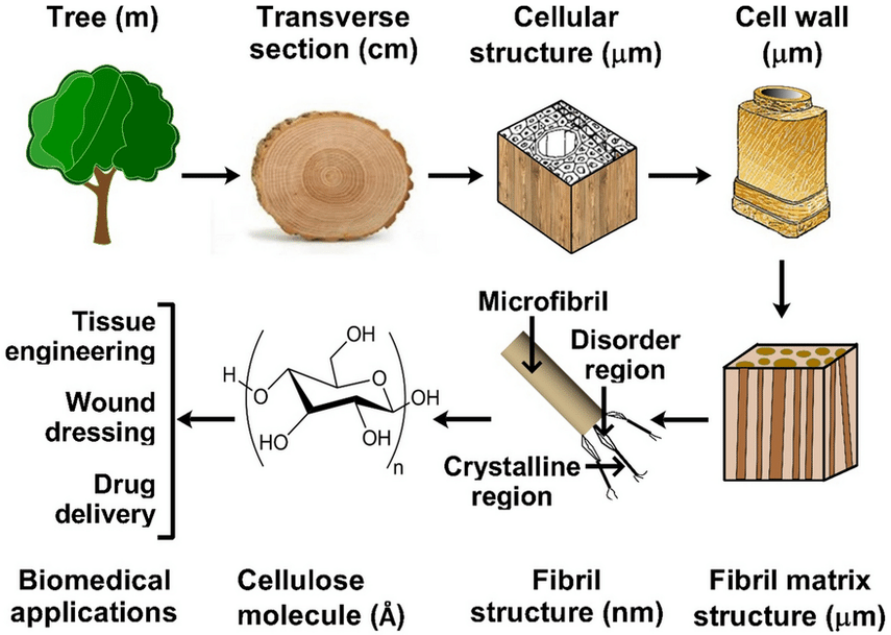
Context Setting: Biomaterials

Biomaterials are a class of materials that has been engineered to interact with biological systems or be derived from biological systems.





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Context Setting: Living Materials

Living Materials (LMs) is VERY new – Does not even have a Wiki page yet!

LMs have the characteristics of biological systems: self-replication, self-regulation, self-healing, environmental responsiveness and self-sustainability.

LMs are an emergent class of synthetic materials formed by combining living biological entities with soft materials.

Engineered Living Materials (ELMs) or Hybrid Living Materials (HLMs) are defined as engineered materials composed of living cells and non-living materials that form or assemble the material itself or modulate the functional performance of the material in some manner.

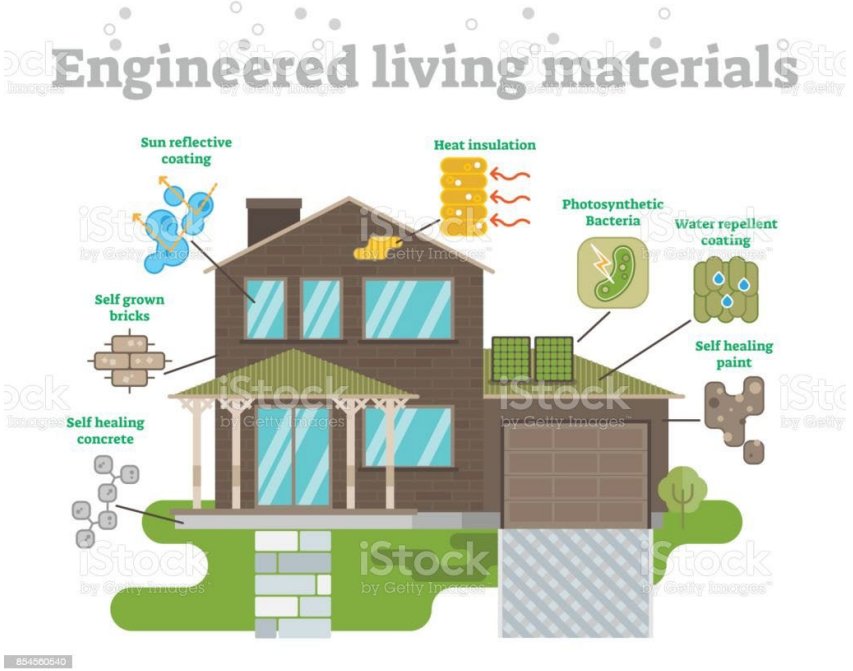
Context Setting: Living Materials

Crossing from a material to a device!

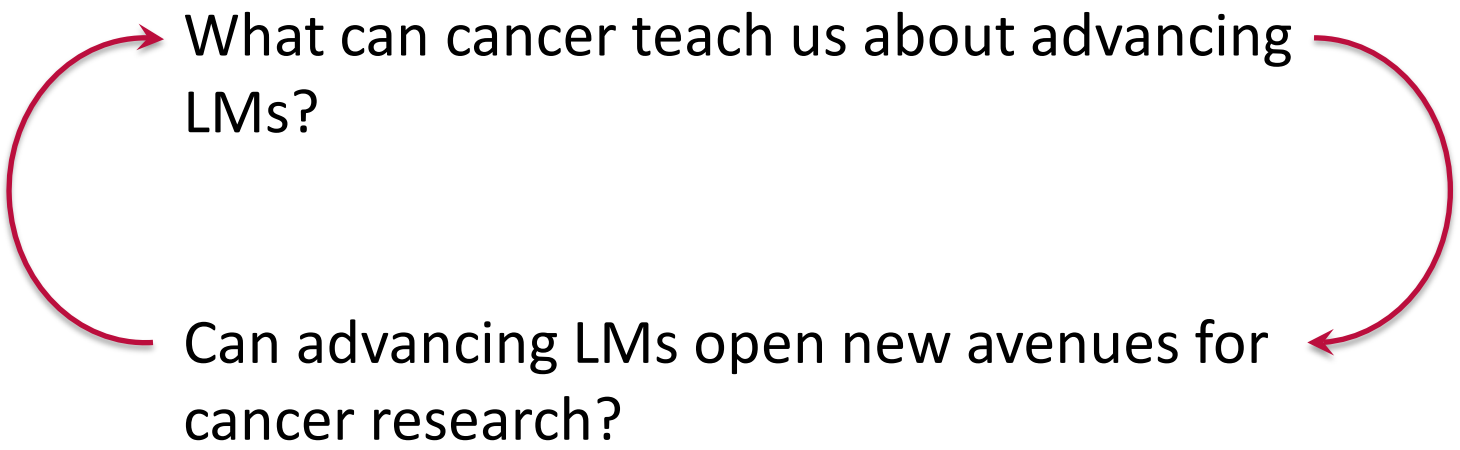
Desired Characteristics –

- Self-directed growth / replication.
- Adaptation / evolve
- Self-organize into structures.
- Sense & respond to environment.
- Manipulate environment.
- Control its own biome.

Sound familiar?



Context Setting: Cancer as a Proto-Typical LM



Thank You

Next up:

MPS-NCI SPARK DCL Review – How to Apply

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MPS-NCI SPARK – Cancer as a Living Material DCL-Review: How to Apply

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Reminder

- Please type your questions/comments into the Q&A box throughout the presentation.
- Chat is open for communications among attendees
- Slides and the recorded webinar will be shared with the participants in a few days

NSF – NCI DCL at a Glance

- **Announcement:** NSF-NCI SuPporting new AReas of Knowledge (SPARK): Cancer as a Living Material – New Ideas and New Connections
- **Purpose:** To encourage submission of supplemental funding requests to promote convergence between materials researchers and cancer researchers to study cancer as a living material and promote new collaborations, cross-training, and exchange of expertise
- **Budget:** NSF Awardees: Direct Cost of $50K

  NCI Awardees: Direct Cost of $50K
- **Application Due Dates:** February 9th 2023 – 1-2 page description
  March 10th 2023 – Supplement submission
- **Start Dates (tentative):** Earliest, July 2023
- **Pre-Application Brief Description:** Required – NSF
  Highly Encouraged - NCI

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Focus of this supplement funding opportunity

Seeking submission of supplemental funding requests to promote convergence between materials researchers and cancer researchers to study cancer as a living material and promote new collaborations, cross-training, and exchange of expertise via:

- 1) the support for visiting graduate students and/or postdoctoral researchers bringing materials science expertise to cancer labs or cancer research expertise to materials science labs. One or both labs must have current NCI or NSF funding in order to receive supplement funding to support the visiting researcher(s).

- 2) the initiation of new collaborative research between materials researchers and cancer researchers; and/or

- 3) the development of workshops or collaboration building events that promote exchange of ideas or convergence in materials research and cancer research.

Exchange of expertise and training

1) the support for visiting graduate students and/or postdoctoral researchers bringing materials science expertise to cancer labs or cancer research expertise to materials science labs. One or both labs must have current NCI or NSF funding in order to receive supplement funding to support the visiting researcher(s).

- The plan should describe the research to be done at each institution and how this exchange of trainees or for visiting trainees to one research lab will support the convergence of materials science and cancer research and impact the current funded project.
- Plans for how the visiting trainee will be mentored should also be included.
- Plans for how the trainee is currently supported and how they will be supported after the collaborative supplement should also be included
- **Important questions to consider:** How will the experience enhance their training potential? Will it clearly enhance their ability to develop into a productive researcher? Is there a clear need for, and value of, the proposed training?

Initiation of new collaborative research

2) the initiation of new collaborative research between materials researchers and cancer researchers

- The plan should describe the research to be done at each institution, the significance of the specific question being pursued, the requirement for collaborative research to accomplish the goals of the project, and how this supplement support will promote convergence of materials science and cancer research and impact the current funded project.

- Description of current or completed collaboration(s) with named key personnel should be briefly described (if applicable).

- **Note that projects facilitating new collaborations are of particular interest.**

Development of workshops or collaboration events

3) the development of workshops or collaboration building events that promote exchange of ideas or convergence in materials research and cancer research.

- **Provide a detailed justification for the conference, including the scientific need, timeliness, and usefulness of the conference to the scientific community.**
- Describe the objectives, specific program, and logistical arrangements for the conference. Describe the format and list the agenda and speakers, including the principal topics to be covered between materials and cancer research, problems to be addressed, and developments or contributions the conference might stimulate.
- Describe the intended participants and plans for promoting collaborations between materials researchers and cancer researchers.
- Describe plans for publicizing the conference to all interested participants and, if applicable, for publishing the proceedings (note that publishing proceedings is not required).

Requirements for successful submissions

- Prior to the submission of a supplemental funding request, PIs must contact the cognizant NCI or NSF Program Director, Eric Johnson-Chavarria and Shadi Mamaghani, respectively, to provide a brief 1–2-page description of the proposed effort by **February 9th, 2023**
- At least one full year on the current NCI or NSF parent grant must remain at the time of submission. Projects in no-cost extension will not qualify for this funding opportunity
- The deadline for invited supplement submissions is **March 10th, 2023**
- Supplement budget requests must reflect the actual needs of the proposed one-year project and should not exceed $50,000 Direct Costs

MPS-NCI SPARK – Cancer as a Living Material NSF- Specific Requirements

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NSF Specific Requirements

- Prior to the submission of a supplemental funding request, PIs must contact the cognizant NSF Program Director and Shadi Mamaghani, respectively, to provide a brief 1–2-page description of the proposed effort by **February 9th, 2023**
- Supplemental funding requests submission: By invitation only! Uninvited request submissions in response to this DCL will be returned without review
- Funding is subject to limitations of available funds
- Supplemental-funding requests will be subject to the NSF's merit review process, as described in the NSF Proposal and Award Policies and Procedures Guide (PAPPG).

NSF Specific Requirements

- All NSF request must follow the guidance specified in the PAPPG Chapter VI.E.5 [4], which includes the following sections: 1) a summary of the proposed work, and 2) justification of the need for supplemental funds 3) budget and budget justification
- The total cost is $50K (Direct cost of $50K plus overhead is acceptable)
- The proposal should build upon your current award but explore new avenues and have positive impact on the current project.
- At the time of submission (March 10th) you will need to have at least 1 year of the award left.

NCI Specific Requirements

- All NCI supplemental-funding requests will be subject to administrative review. NCI will conduct administrative reviews of applications and will support the most meritorious applications submitted for consideration, based upon the availability of funds. **NCI grant mechanisms eligible for supplemental funding include R01, U01, R61 and R33 awards**.
- PIs are strongly encouraged to contact **Eric M. Johnson Chavarria** and provide the brief 1-2 page description by **February 9th 2023**. Please include your parent award grant number and the name of the assigned program officer of your parent award.
- All requests for supplements to NCI grants must be submitted electronically through eRA Commons, see NOT OD-20-128 for more information. Applicants are strongly encouraged to notify the NCI Program Officer assigned to the parent award that a request has been submitted in response to this DCL in order to facilitate efficient processing of the request.
- **Note: Submissions that do no follow these steps may not be given full consideration.**

Summary

- Provided the MPS-NCI collaboration, history, and goals
- Highlighted the MPS-NCI Square-Tables, and emphasis on Living Materials for this DCL
- Reviewed and highlighted some of the interesting connections between cancer and living materials
- Reviewed the DCL and specifics on how to apply for this collaborative supplement opportunity for existing NSF and NCI awards

Thank You

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