



# RESEARCH UPDATE

A WEEKLY COMMUNICATION FROM THE OFFICE OF RESEARCH & SPONSORED PROGRAMS

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December 3, 2020

## GENERAL INFORMATION

- **Student Research Town Hall**

The Office of Research is hosting a Zoom Town Hall Meeting on December 11, 2020 from 12:00 – 1:00 p.m. We will be available to provide updates on Summer Research, the Distinction Program, funding opportunities and answer any questions that you have. A calendar invitation with a Zoom meeting link will be sent out soon.

Contact: [Joseph N. Benoit, Ph.D.](#)

- **Director's Corner**

- The Director's Corner in this edition is written by our Director of Research Laboratories, Dr. Woods, and can be found under the Research Laboratories heading. In this column, Dr. Woods discusses our newest laboratory capabilities.

## MEDICAL STUDENT RESEARCH

- **New Student Research Webpage**

- We are excited and pleased to announce the new [Medical Student Research webpage](#). This webpage contains relevant program information including the Distinction in Research, Summer Research Experience, and other available programs, and includes other basic resources to help students get started with research. Please visit for additional information.

- **Summer Research Experience**

- The Office of Research and Sponsored Programs (ORSP) is pleased to announce the 2021 Medical Student Summer Research Experience and invite you to submit applications for the program. The summer experience will be offered during the summer of 2021 and consists of a 6-week research experience that will commence with Orientation Day on June 2nd and culminate on July 17th with Medical Student Research Day. Participants are expected to attend Orientation Day, devote full commitment to the mentored research, and present their work during Medical Student Research Day. A list of available projects and applications are available on the [Summer Research Experience webpage](#). Completed applications must be received by the deadline date: February 2nd, 2021 at 11:59 PM.

- **Louisa Burns Osteopathic Research Poster Presentations Call for Abstracts**

- The Louisa Burns Osteopathic Research Committee (LBORC) is calling for submissions to the [2021 LBORC-NUFA Research Poster Presentation](#). The presentation will be held in March during the 2021 AAO Convocation. The deadline for submission is February 1, 2021.

Contact: [Adrienne Kania, DO, FAAO NMM/OMM](#)

- **AOA Research Training Grants**

- We are about a month away from the opening date for the [AOA Research Training Grants](#) for medical students. The application cycle will open on December 15, 2020 and close on February 15, 2021. These training grants provide up to \$5,000 in funding for medical students and aim to promote the osteopathic approach to care through AOA-funded research.

- **Student Research Support Fund**

- In support of Burrell College medical student research and creative scholarship endeavors, the Office of Research and Sponsored Programs (ORSP) is pleased to announce the new 2020-2021 Student Research Support Fund and invites student researchers to submit an application. This funding opportunity provides Burrell College medical students with limited funds to support their research and creative scholarship. Applications are available on the [program website](#).

- ***Distinction in Research***

- The Office of Research and Sponsored Programs (ORSP) is pleased to announce the **Distinction in Research** that will begin accepting applications on **January 15, 2021**. The Distinction is a highly intensive and optional path that provides opportunities for medical students who seek higher levels of mentored research experiences.

Contact: [sjontiveros@bcomNM.org](mailto:sjontiveros@bcomNM.org) or [research@bcomNM.org](mailto:research@bcomNM.org)

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## RESEARCH LABORATORIES

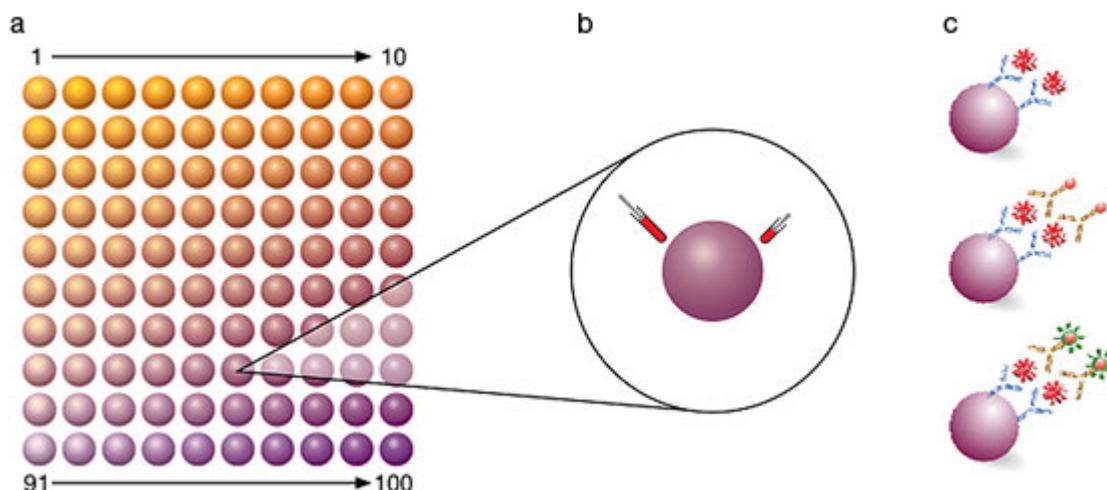
### • Director's Corner

#### Exciting New Technology Coming to the BioScience Research Lab

The Burrell College Office of Research & Sponsored Programs is excited to add to our biomedical science research capabilities with the recent addition of a Bio-Rad Bio-Plex® 200 Multiplexed Immunoassay System. For those of you familiar with techniques for quantifying biological analytes using traditional immunoassays, such as Enzyme-Linked Immunosorbent Assays (ELISAs) and even more cumbersome Western Blots, I think you will find that this technology is far superior to the tried-and-true methods of years past. The following will be a brief introduction to multiplexed immunoassays using the Bio-Plex system. We encourage you to reach out to the Research Office if you have a scientific question that can be addressed using this technology.

The ELISA was invented in 1971 by two Swedish scientists, Eva Engvall and Peter Perlman, and this new technique revolutionized medicine and biological research. ELISAs use antibodies to detect proteins and can be done in a matter of hours, or in some cases minutes. However, one drawback to traditional ELISAs is that the test can only detect a single analyte at a time, which means that separate 'kits' are required for each target, whether it be a cytokine, hormone or viral protein. This is where multiplexed, bead-based immunoassays possess a clear advantage compared to the traditional ELISA.

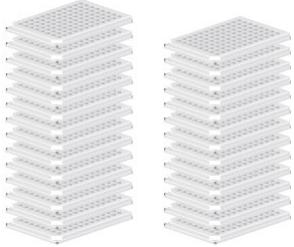
XMap technology developed by the Luminex Corporation is based on magnetic beads with varying content of red and infrared dyes, making each bead optically unique and distinguishable from other beads. Each bead can then be linked to a primary antibody directed against a specific target, as illustrated in **Figure 1**. After mixing the beads with the specimen, the beads are then treated with a biotinylated detection antibody and a common reporter dye. We then interrogate the beads with laser light to separate them into the unique bead regions and then measure the intensity of fluorescent light emitted, which correlates with the amount of bound target. Because each bead is unique, it is possible for us to detect up to 100 different targets (one antibody target per bead region) in a single sample. That, simply, is multiplexing.



**Figure 1**

**Multiplex immunoassay technology.** Beads are colored internally with two different fluorescent dyes (red and infrared). Different concentrations of red and infrared dyes are used to generate up to 100 distinct bead regions. Each bead region is conjugated to a specific target analyte (a) followed by binding with a biotinylated detection antibody (b) and a reporter dye, streptavidin-conjugated phycoerythrin (c). From: <https://www.bio-rad.com/en-us/applications-technologies/multiplex-immunoassays?ID=LUSM0E&UU>.

Now some of you are probably saying "Sounds cool, but does it really make a difference? Why should Burrell College invest in this equipment?" It comes down to saving the researcher (i.e., you!) money and time while also expanding the options you have at your fingertips to generate large amounts of data quickly. **Figure 2** shows a side-by-side comparison of traditional ELISA and Bio-Plex for quantifying 27 different cytokines in 80 samples. The Bio-Plex is faster, cheaper, requires less starting material, and is more sensitive.

	<b>ELISA</b>	<b>Bio-Plex</b>
Number of cytokines	27	27
Number of samples	80	80
Total data points	2,160	2,160
Number of 96-well plates	27	1
		
<b>Data points per plate</b>	<b>80</b>	<b>2,160</b>
<b>Total time required</b>	<b>&gt;60 hr</b>	<b>3 hr</b>
Sample volume	Serum or plasma, >1 ml* Cell culture supernatant, >1 ml*	Serum or plasma, 12.5 µl Cell culture supernatant, 50 µl
Assay range	Serum or plasma, 2–3,000 pg/ml Cell culture supernatant, 2–3,000 pg/ml	Serum or plasma, ~0.2–3,200 pg/ml Cell culture supernatant, ~2–32,000 pg/ml
<b>Cost in consumables</b>	<b>~\$13,500</b> Estimate \$500 per ELISA kit	<b>\$4,600</b>

**Figure 2. Protocol comparison between traditional ELISA and Bio-Plex system.**

The Burrell College Research Laboratories are standing by and ready to help you expand your research efforts using the Bio-Plex instrument. We provide the training and instrument familiarity to get you up and running fast. Please explore Bio-Rad's Bio-Plex [Assay Finder](#) where you will find over 500 different targets related to inflammation, cancer, cell signaling, diabetes, and more.

Contact: [Michael Woods, Ph.D.](#)

- **Research Laboratory Access**
  - We wish to remind laboratory users to contact Ms. Kalli Martinez before visiting the Research Laboratories. We continue to operate at a reduced capacity and it is important that we maintain awareness of laboratory user access.

Email: [M.Woods, Ph.D. and K. Martinez](#)

## DATES AND DEADLINES

- Institutional Review Board (IRB) – December 14, 2020; 12:00 – 1:30 p.m.
  - Email: [IRB@bcomm.org](mailto:IRB@bcomm.org)
- Institutional Biosafety Committee (IBC) – January 6, 2021, 12:00-1:00 p.m.
  - Email: [Research@bcomm.org](mailto:Research@bcomm.org)
- Research Advisory Council (RAC) – November 20, 2020, 1:00 - 3:00 p.m.
- [Distinguished Researcher Seminar Series](#)

## POLICY & REGULATORY UPDATE

- **Burrell College New or Updated Policies and Procedures**
  - The Biosafety Manual has been updated after undergoing IBC review and is available on the Burrell College website. A minor modification has been made to the Blood-borne Pathogen Exposure Control Plan and we are still finalizing an SOP to inform the process by which Burrell Investigators can document Hepatitis B vaccination.
    - [Biological Safety Manual](#)
    - [Bloodborne Pathogen Exposure Control Plan](#)
  - This new SOP details the use of electronic gift cards for payments to research participants.

- [RSP.017](#), "Payments to Research Participants"
- Human Research Protection
  - [AHRQ Guide Notice on Exception to the Use of the Single IRB Review Requirements During the Coronavirus Disease 2019 \(COVID-19\) Public Health Emergency](#)
- CDC
  - [Biosafety in Microbiological and Biomedical Laboratories \(BMBL\) 6<sup>th</sup> Edition](#) New Edition!

## FUNDING OPPORTUNITIES and NOTICES

- Guidance on new proposal submission and related information is available in MS Teams and on the Research Office Website. Please submit a completed [Proposal Transmittal Routing Request](#) in advance of the deadline. Allow five (5) business days for institutional review and signatures.
- [NIH Weekly Funding Opportunities and Notices](#) – November 27, 2020
- American Osteopathic Association
  - [AOA Research Grants](#) for DOs, MDs, and PhDs
  - [Research Opportunities](#) for resident physicians, fellows and osteopathic medical students
- [Wells Fargo Philanthropic Services](#) (Search for Opportunities)
- **New Mexico SBIR/STTR Innovation Summit:** *Learn more about federal funding and resources, at Arrowhead Center's NM FAST virtual New Mexico SBIR/STTR Innovation Summit on December 9<sup>th</sup>. Federal program managers, defense representatives, experts, and local organizations who have a vested interest in driving innovation through the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs will be on hand to walk you through the process.*
- [Experimental Biology 2021](#) will be held April 27-30, 2021 as a virtual meeting.
- [AACOM Educating Leaders 2021](#) will be held April 20-22 as a virtual event.
- [American Academy of Osteopathy Convocation](#) will be held March 17-21, 2021 (*Currently being planned as a hybrid event*)

## CLINICAL TRIALS INFORMATION

- Clinical Trials Information
  - [TrialSite News](#) is a digital media resource dedicated to transparent and open coverage of clinical research trial sites around the globe.

## INFORMATION FOR AUTHORS

- **Beware of Predatory Publishing Practices**
  - Dr. Kania shared the following article which I believe serves as an excellent cautionary note for all authors.  
[Opinion: I Published a Fake Paper in a 'Peer-Reviewed' Journal](#) Thanks, Dr. Kania!
- **Information on Publishing Venues**
  - The Office of Research and the Burrell College Health Sciences Library are available to assist with any questions that you may have regarding appropriate places to publish your research.
- **[Cureus Journal of Medical Sciences](#)**
  - Cureus is an open access peer reviewed medical journal based in San Francisco, CA that offers free publication for articles that follow their author instructions.
- **[Call for COVID-19 Research Papers](#):** The JAOA editors invite researchers to share information and data about their experiences with COVID-19 with the osteopathic community.
- Are you interested in publishing a literature review? The Journal of the American Osteopathic Association has created a video that provides tips for putting together a quality [Systematic Literature Review](#)

## RECENT AND FORTHCOMING SCHOLARLY WORK BY BURRELL COLLEGE RESEARCHERS

(Please [email us](#) with your news and we will add it to future Updates.)