U.S. Department of Health & Human Services

NIH Center for Scientific Review

ENQUIRE Cluster 14

Microbiology and Infectious Diseases

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CSRAC Presentation - 28 March 2022

Ten study sections evaluated in Cluster 14

Bacterial Pathogen Group

- **PCMB** - Prokaryotic Cell and Molecular Biology (55) - fundamental cell and molecular biology
- **BACP** - Bacterial Pathogenesis (55) - bacterial side of host-pathogen interactions
- **HIBP** - Host Interactions with Bacterial Pathogens (83) - host side of host-pathogen interactions
- **Bacterial SEP (IDIA-80)** - Bacterial Pathogenesis (71) - overflow for BACP and HIBP

Viral Pathogen Group

- **VIRA** – Virology A (102) - biophysical aspects of virology
- **VIRB** – Virology B (102) - viral immunity

Eukaryotes and Vector Biology (Tropical Medicine) Group

- **PTHE** - Pathogenic Eukaryotes (74) - protozoal, helminthic, and fungal pathogens
- **VB** - Vector Biology (62) - arthropod and molluscan intermediate hosts

Host-Focused and Vaccine Group

- **IHD** - Immunity and Host Defense (102) - host immune response – pathogen agnostic
- **VMD** - Vaccines Against Microbial Diseases (115) - vaccines, all pathogens except HIV

External Workgroup Members

Chairperson:

Avery August	Immune response	Cornell University

Workgroup Members:

Serap Aksoy	Tropical medicine, epidemiology	Yale University
Craig Cameron	Viral genome replication	University of North Carolina
Carolyn Coyne	Cellular barriers, virus	Duke University
Suzanne Fleiszig	Immunology of the eye, bacteria	University of California Berkeley
Alan Hauser	Bacterial infections, resistance	Northwestern University
Christopher Hayes	Prokaryotic biology/biochemistry	University of California Santa Barbara
Ramaswamy Kalyanasundaram	Vaccine development, tropical	University of Illinois Chicago
Theresa Koehler	Host-pathogen interactions	University of Texas Health
Shirley Luckhart	Tropical medicine, malaria	University of Idaho
Mairi Noverr	Fungal pathogens	Tulane University
Liise-anne Pirofski	Immunity, vaccine, antibodies	Einstein/Montefiore
Andres Vazquez-Torres	Bacterial infections, resistance	University of Colorado

CSRAC Observer:

Michelle Janelsins	University of Rochester

External Workgroup Meeting (November 2021)

Current Study Sections (10)

Bacterial Pathogen Group
- **PCMB** - Prokaryotic Cell and Molecular Biology (55)
- **BACP** - Bacterial Pathogenesis (55)
- **HIBP** - Host Interactions with Bacterial Pathogens (83)
- **Bacterial SEP (IDIA-80)** - Topics in Bacterial Pathogenesis (71)

Viral Pathogen Group
- **VIRA** – Virology A (102)
- **VIRB** – Virology B (102)

Eukaryotes and Vector Biology Group
- **PTHE** - Pathogenic Eukaryotes (74)
- **VB** - Vector Biology (62)

Host-Focused and Vaccine Group
- **IHD** - Immunity and Host Defense (102)
- **VMD** - Vaccines Against Microbial Diseases (115)

Overarching considerations:

- Many of the current study sections are very narrowly focused on a particular pathogen, while the science has become very collaborative and multi-disciplinary.
- Several study sections have become overcrowded, particularly those focused on viral research.
- There is a need to better facilitate the review of tropical infectious agents and emerging diseases, including their environmental drivers.
- There is no obvious place for projects investigating microbe-microbe interactions or polymicrobial interactions.

External Workgroup Recommendations

Bacterial Pathogen Group:

PCMB (55) -> PB – Prokaryotic Biology*

BACP (55) -> PV – Bacterial Virulence*

HIBP (83) -> BHI – Bacterial-Host Interactions*

New **-> IMII** – Interspecies Microbial Interactions and Infections*

Bacterial SEP (71) -> *Dissolved, with applications distributed to* PB, PV, BHI and IMII

Notes:

- PB, PV, and BHI are organized along 3 broad themes: 1) agent (pathogen), 2) agent-cell interactions, and 3) agent interactions with the host organism.
- PB retains the scope of PCMB, but now includes pathogens if the focus on process.
- PV has an emphasis on virulence.
- BHI includes transmission, emerging resistance, and in vivo evolution/fitness.
- IMII covers more than bacteria but will have a significant bacterial component.

* - Study section names are tentative

External Workgroup Recommendations

Viral Pathogen Group:

VIRA (102) -> MCV – Molecular and Cellular Virology*

VIRB (102) -> VPI – Viral Pathogenesis and Immunity*

New **-> VDT** – Viral Dynamics and Transmission*

Notes:

- Applications from VIRA and VIRB now distributed across 3 study sections: MCV, VPI, and VDT
- MCV, VPI, and VDT organized along the same broad themes as that defined for bacteria.
- VDT covers in vivo infection dynamics and tropism, dissemination, viral variation, evolution, emergence of resistance, fitness pressure, evolutionary pressure.

* - Study section names are tentative

External Workgroup Recommendations

Host-Focused and Vaccine Group:

IHD (102) -> IHD *with reduced scope*

VMD (115) -> VMD *with reduced scope*

Notes:

- Modifications to the IHD guidelines to move more pathogen-focused applications out, to keep IHD more immune focused.
- Shift the VMD guidelines to more late-stage, near translational stage – not platform or antigen discovery. Early stage would go to a pathogen-focused study section.

External Workgroup Recommendations

Eukaryotes and Vector Biology (Tropical Diseases) Group:

PTHE (74) -> Dissolved and reimagined

VB (62) -> Dissolved and reimagined

New -> **MFMM** – Medically Important Fungi and Medical Mycoses*

New -> **PZVA** – Parasitic, Zoonotic, and Vector-Borne Diseases A*

New -> **PZVB** – Parasitic, Zoonotic, and Vector-Borne Diseases B*

Notes:

- Combining mycology and parasitology in PTHE viewed as challenging (siloed reviews).
- Fungal applications from PTHE (about 27%) would move to new MFMM.
- Parasites and helminths from PTHE (about 73%) would move to PZVA and/or PZVB.
- Applications in VB would be distributed across PZVA and PZVB.
- PZVA and PZVB would include parasites, viruses, and bacteria with an emphasis on their complex life cycles, including environmental drivers and the One Health Concept.

* - Study section names are tentative

External Workgroup Recommendations

Interspecies and Complex Lifecycle Group (New):

IMII – Interspecies Microbial Interactions and Infections*

PZVA – Parasitic, Zoonotic, and Vector-Borne Diseases A*

PZVB – Parasitic, Zoonotic, and Vector-Borne Diseases B*

Notes:

- These three study sections are not focused on a single pathogen but investigate interspecies and/or complex interactions.
- IMII focused on interspecies and polymicrobial interactions (such as biofilm, microbiome).
- PZVA focused on complex life cycles at the genome and cellular scales.
- PZVB focused on complex life cycles at the community and population-level scales.

* - Study section names are tentative

External Workgroup Recommendations (Final)

Current Study Sections (10)	Proposed Study Sections (12)
Bacterial Pathogen Group **PCMB** - Prokaryotic Cell and Molecular Biology (55) **BACP** - Bacterial Pathogenesis (55) **HIBP** - Host Interactions with Bacterial Pathogens (83) **Bacterial SEP (IDIA-80)** - Topics in Bacterial Pathogenesis (71)	**Bacterial Pathogen Group** **PB** – Prokaryote Biology* **BV** – Bacterial Virulence* **BHI** – Bacterial-Host Interactions*
Viral Pathogen Group **VIRA** – Virology A (102) **VIRB** – Virology B (102)	**Viral Pathogen Group** **MCV** – Molecular and Cellular Virology* **VPI** – Viral Pathogenesis and Immunity* **VDT** – Viral Dynamics and Transmission*
Eukaryotes and Vector Biology Group **PTHE** - Pathogenic Eukaryotes (74) **VB** - Vector Biology (62)	**Fungal Pathogen Group** **MFMM** – Medically Important Fungi and Medical Mycoses* **Interspecies and Complex Life Cycle Group** **IMII** – Interspecies Microbial Interactions and Infections* **PZVA** – Parasitic, Zoonotic, and Vector-Borne Diseases A* **PZVB** – Parasitic, Zoonotic, and Vector-Borne Diseases B*
Host-Focused and Vaccine Group **IHD** - Immunity and Host Defense (102) **VMD** - Vaccines Against Microbial Diseases (115)	**Host-Focused and Vaccine Group** **IHD** - Immunity and Host Defense (with reduced scope)* **VID** – Vaccines against Infectious Diseases (with reduced scope)*

* - Study section names are tentative

External Workgroup Recommendations (Final)

Bacterial

Current Study Sections (10)	Proposed Study Sections (12)
Bacterial Pathogen Group	**Bacterial Pathogen Group**
PCMB - Prokaryotic Cell and Molecular Biology (55)	**PB** – Prokaryote Biology*
BACP - Bacterial Pathogenesis (55)	**BV** – Bacterial Virulence*
HIBP - Host Interactions with Bacterial Pathogens (83)	**BHI** – Bacterial-Host Interactions*
Bacterial SEP (IDIA-80) - Topics in Bacterial Pathogenesis (71)	
Viral Pathogen Group	**Viral Pathogen Group**
VIRA – Virology A (102)	**MCV** – Molecular and Cellular Virology*
VIRB – Virology B (102)	**VPI** – Viral Pathogenesis and Immunity*
	VDT – Viral Dynamics and Transmission*
Eukaryotes and Vector Biology Group	**Fungal Pathogen Group**
PTHE - Pathogenic Eukaryotes (74)	**MFMM** – Medically Important Fungi and Medical Mycoses*
VB - Vector Biology (62)	**Interspecies and Complex Life Cycle Group**
	IMII – Interspecies Microbial Interactions and Infections*
	PZVA – Parasitic, Zoonotic, and Vector-Borne Diseases A*
	PZVB – Parasitic, Zoonotic, and Vector-Borne Diseases B*
Host-Focused and Vaccine Group	**Host-Focused and Vaccine Group**
IHD - Immunity and Host Defense (102)	**IHD** - Immunity and Host Defense (with reduced scope)*
VMD - Vaccines Against Microbial Diseases (115)	**VID** – Vaccines against Infectious Diseases (with reduced scope)*

* - Study section names are tentative

External Workgroup Recommendations (Final)

Viral

Current Study Sections (10)

Bacterial Pathogen Group

- **PCMB** - Prokaryotic Cell and Molecular Biology (55)
- **BACP** - Bacterial Pathogenesis (55)
- **HIBP** - Host Interactions with Bacterial Pathogens (83)
- **Bacterial SEP (IDIA-80)** - Topics in Bacterial Pathogenesis (71)

Viral Pathogen Group

- **VIRA** – Virology A (102)
- **VIRB** – Virology B (102)

Eukaryotes and Vector Biology Group

- **PTHE** - Pathogenic Eukaryotes (74)
- **VB** - Vector Biology (62)

Host-Focused and Vaccine Group

- **IHD** - Immunity and Host Defense (102)
- **VMD** - Vaccines Against Microbial Diseases (115)

Proposed Study Sections (12)

Bacterial Pathogen Group

- **PB** – Prokaryote Biology*
- **BV** – Bacterial Virulence*
- **BHI** – Bacterial-Host Interactions*

Viral Pathogen Group

- **MCV** – Molecular and Cellular Virology*
- **VPI** – Viral Pathogenesis and Immunity*
- **VDT** – Viral Dynamics and Transmission*

Fungal Pathogen Group

- **MFMM** – Medically Important Fungi and Medical Mycoses*

Interspecies and Complex Life Cycle Group

- **IMII** – Interspecies Microbial Interactions and Infections*
- **PZVA** – Parasitic, Zoonotic, and Vector-Borne Diseases A*
- **PZVB** – Parasitic, Zoonotic, and Vector-Borne Diseases B*

Host-Focused and Vaccine Group

- **IHD** - Immunity and Host Defense (with reduced scope)*
- **VID** – Vaccines against Infectious Diseases (with reduced scope)*

External Workgroup Recommendations (Final)

Host/Vaccine

Current Study Sections (10)

Bacterial Pathogen Group
- **PCMB** - Prokaryotic Cell and Molecular Biology (55)
- **BACP** - Bacterial Pathogenesis (55)
- **HIBP** - Host Interactions with Bacterial Pathogens (83)
- **Bacterial SEP (IDIA-80)** - Topics in Bacterial Pathogenesis (71)

Viral Pathogen Group
- **VIRA** – Virology A (102)
- **VIRB** – Virology B (102)

Eukaryotes and Vector Biology Group
- **PTHE** - Pathogenic Eukaryotes (74)
- **VB** - Vector Biology (62)

Host-Focused and Vaccine Group
- **IHD** - Immunity and Host Defense (102)
- **VMD** - Vaccines Against Microbial Diseases (115)

More pathogen-focused

Proposed Study Sections (12)

Bacterial Pathogen Group
- **PB** – Prokaryote Biology*
- **BV** – Bacterial Virulence*
- **BHI** – Bacterial-Host Interactions*

Viral Pathogen Group
- **MCV** – Molecular and Cellular Virology*
- **VPI** – Viral Pathogenesis and Immunity*
- **VDT** – Viral Dynamics and Transmission*

Fungal Pathogen Group
- **MFMM** – Medically Important Fungi and Medical Mycoses*

Interspecies and Complex Life Cycle Group
- **IMII** – Interspecies Microbial Interactions and Infections*
- **PZVA** – Parasitic, Zoonotic, and Vector-Borne Diseases A*
- **PZVB** – Parasitic, Zoonotic, and Vector-Borne Diseases B*

Host-Focused and Vaccine Group
- **IHD** - Immunity and Host Defense (with reduced scope)*
- **VID** – Vaccines against Infectious Diseases (with reduced scope)*

* - Study section names are tentative

External Workgroup Recommendations (Final)

Tropical Med

Current Study Sections (10)

Bacterial Pathogen Group
- **PCMB** - Prokaryotic Cell and Molecular Biology (55)
- **BACP** - Bacterial Pathogenesis (55)
- **HIBP** - Host Interactions with Bacterial Pathogens (83)
- **Bacterial SEP (IDIA-80)** - Topics in Bacterial Pathogenesis (71)

Viral Pathogen Group
- **VIRA** – Virology A (102)
- **VIRB** – Virology B (102)

Eukaryotes and Vector Biology Group
- **PTHE** - Pathogenic Eukaryotes (74)
- **VB** - Vector Biology (62)

(Apps from outside cluster)

Host-Focused and Vaccine Group
- **IHD** - Immunity and Host Defense (102)
- **VMD** - Vaccines Against Microbial Diseases (115)

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Proposed Study Sections (12)

Bacterial Pathogen Group
- **PB** – Prokaryote Biology*
- **BV** – Bacterial Virulence*
- **BHI** – Bacterial-Host Interactions*

Viral Pathogen Group
- **MCV** – Molecular and Cellular Virology*
- **VPI** – Viral Pathogenesis and Immunity*
- **VDT** – Viral Dynamics and Transmission*

Fungal Pathogen Group
- **MFMM** – Medically Important Fungi and Medical Mycoses*

Interspecies and Complex Life Cycle Group
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- **PZVB** – Parasitic, Zoonotic, and Vector-Borne Diseases B*

Host-Focused and Vaccine Group
- **IHD** - Immunity and Host Defense (with reduced scope)*
- **VID** – Vaccines against Infectious Diseases (with reduced scope)*

* - Study section names are tentative

Internal Panel (February 2022)

Areas of Agreement:

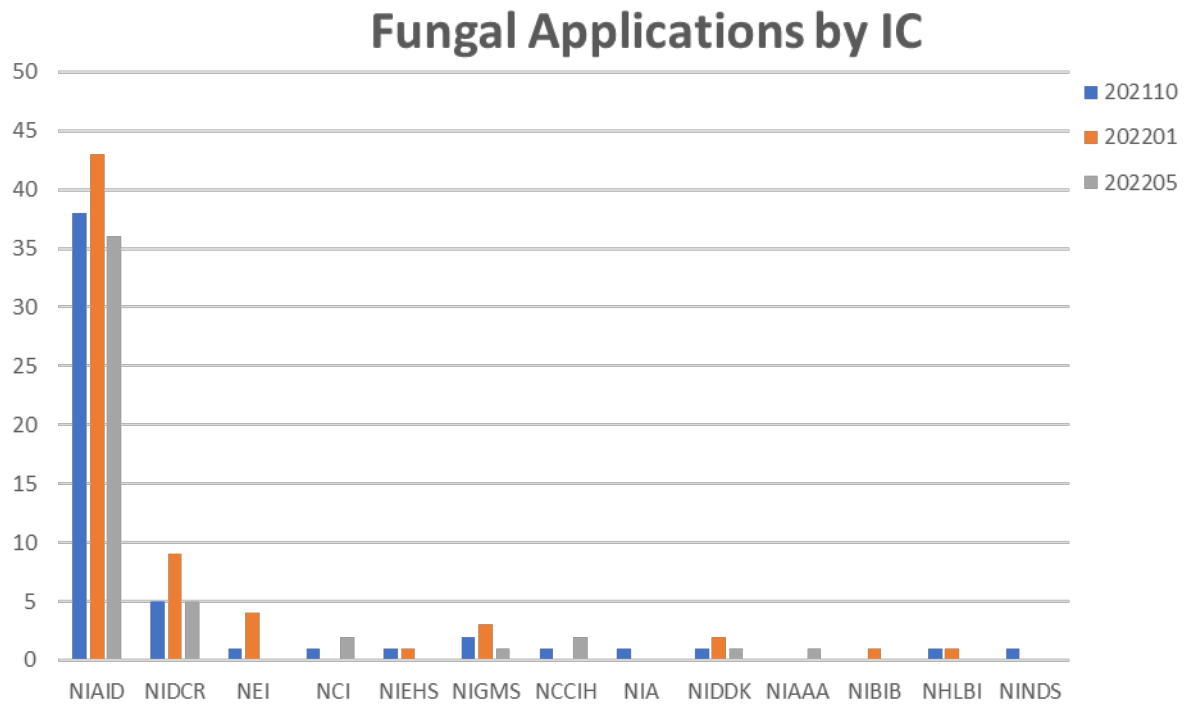
- Supportive of recommended restructuring of bacterial and viral study sections, with minor suggestions to clarify scope and overlaps.
- Supportive of recommended changes in scope of IHD and VMD to help reduce their size. Recommended that the study section names be changed to reflect this change in scope. Suggestions to clarify scope and overlaps.
- Welcomed the creation of a microbial-microbial interactions study section (IMII), recognizing that microbes live in communities and their interactions can be important drivers of virulence.
- The inclusion of broader environmental and population-based drivers to PZVA/PZVB was welcomed.

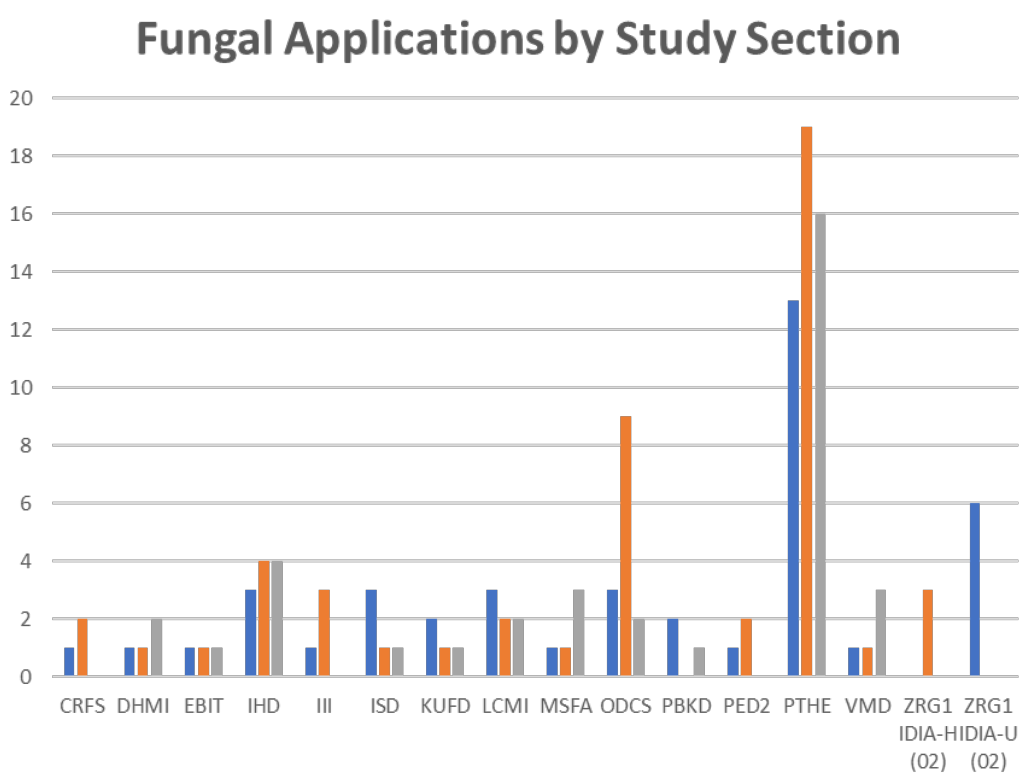
Internal Panel (February 2022)

Areas of Concern:

- Concerned that a mycology study section (MFMM) would not have enough applications and that the the science would be too narrow.
- Concerned that all parasites previously housed in PTHE would now be reviewed alongside bacteria, viruses, and vectors in PZVA/PZVB and may be disadvantaged in these new broad study sections.
- Concerned that parasite *biology* would no longer have a review home. Suggested that a PZVA might have a parasitic-focus, while PZVB might have a bacterial/viral focus.

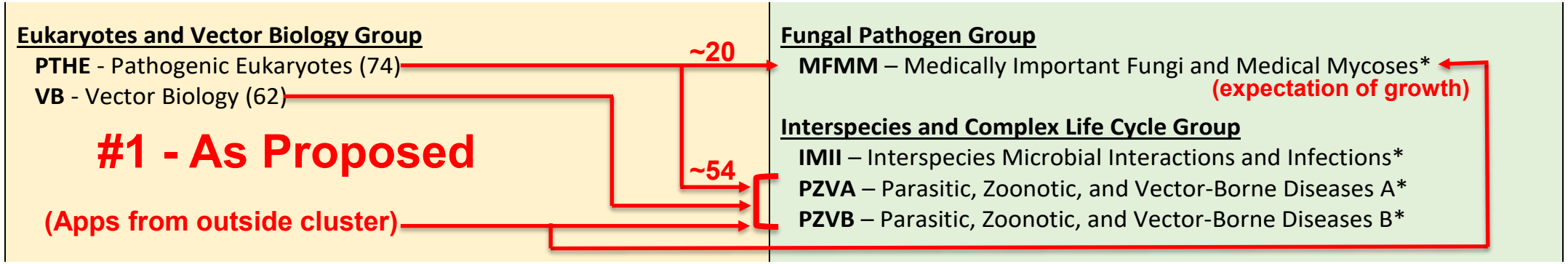
Additional Post-Meeting CSR Analysis



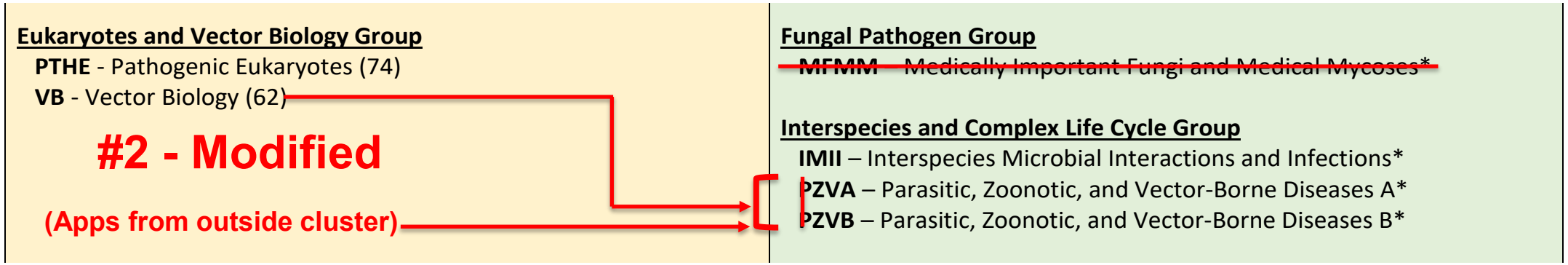


- Currently there are not enough fungal applications across all CSR study sections to support the creation of MFMM.

Possible Scenarios



Scenario #1 – Create MFMM as proposed with the expectation of growth.



Scenario #2

- Keep fungal and parasite biology together for now.
- Parasite biology would not move to PZVA/PZVB. PZVA and PZVB would lose the “P” (parasite).
- Additional analysis/mock sorts needed to determine whether PZVA/PZVB would be one or two chartered study sections.

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Discussion

Possible Scenarios

Proposed Study Sections (12) **Scenario #1**

Bacterial Pathogen Group
- **PB** – Prokaryote Biology*
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- **BHI** – Bacterial-Host Interactions*

Viral Pathogen Group
- **MCV** – Molecular and Cellular Virology*
- **VPI** – Viral Pathogenesis and Immunity*
- **VDT** – Viral Dynamics and Transmission*

Fungal Pathogen Group
- **MFMM** – Medically Important Fungi and Medical Mycoses*

Interspecies and Complex Life Cycle Group
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- **PZVA** – Parasitic, Zoonotic, and Vector-Borne Diseases A*
- **PZVB** – Parasitic, Zoonotic, and Vector-Borne Diseases B*

Host-Focused and Vaccine Group
- **IHD** - Immunity and Host Defense (with reduced scope)*
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Proposed Study Sections (~~12~~ 10-11) **Scenario #2**

Bacterial Pathogen Group
- **PB** – Prokaryote Biology*
- **BV** – Bacterial Virulence*
- **BHI** – Bacterial-Host Interactions*

Viral Pathogen Group
- **MCV** – Molecular and Cellular Virology*
- **VPI** – Viral Pathogenesis and Immunity*
- **VDT** – Viral Dynamics and Transmission*

~~**Fungal Pathogen Group**~~
- ~~**MFMM** – Medically Important Fungi and Medical Mycoses*~~
- **PTHE –** Pathogenic Eukaryotes

Interspecies and Complex Life Cycle Group
- **IMII** – Interspecies Microbial Interactions and Infections*
- **PZVA** – Parasitic, Zoonotic, and Vector-Borne Diseases A*
- **PZVB** – Parasitic, Zoonotic, and Vector-Borne Diseases B*

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* - Study section names are tentative