BIOPAC

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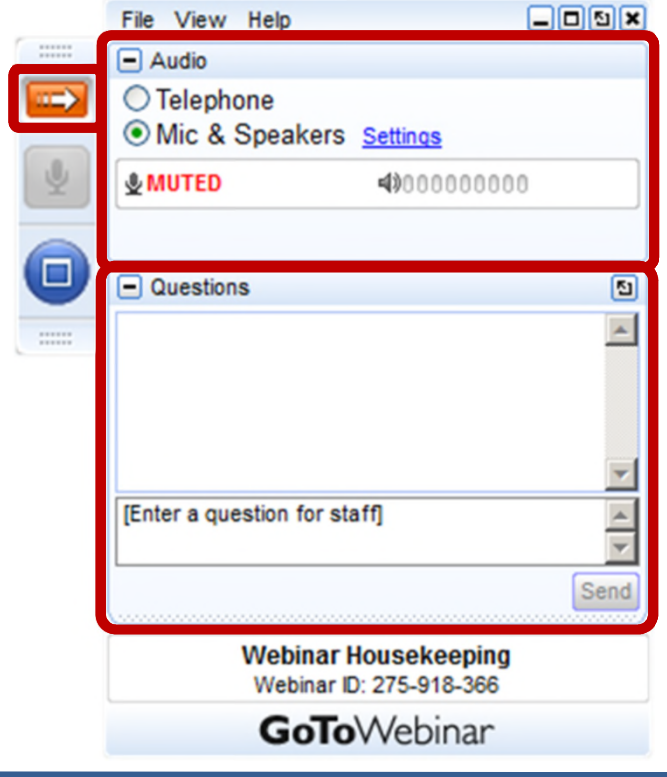
Inspiring people and enabling discovery about life

BIOPAC's Guide to EEG for Research: Mobita Wireless EEG

BIOPAC® Systems, Inc.

Housekeeping

- Attendees are on Mute
- Headset is Recommended!
- Questions addressed at end of Webinar and in a Q&A follow-up document



Your Participation

Open and hide your control panel

Join audio:

- Choose "Mic & Speakers" to use VoIP
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Submit questions and comments via the Questions panel

Note: Today's presentation is being recorded and will be provided when available.

BIOPAC Guide to wireless EEG with Mobita

Frazer Findlay CEO, BIOPAC Systems, Inc.

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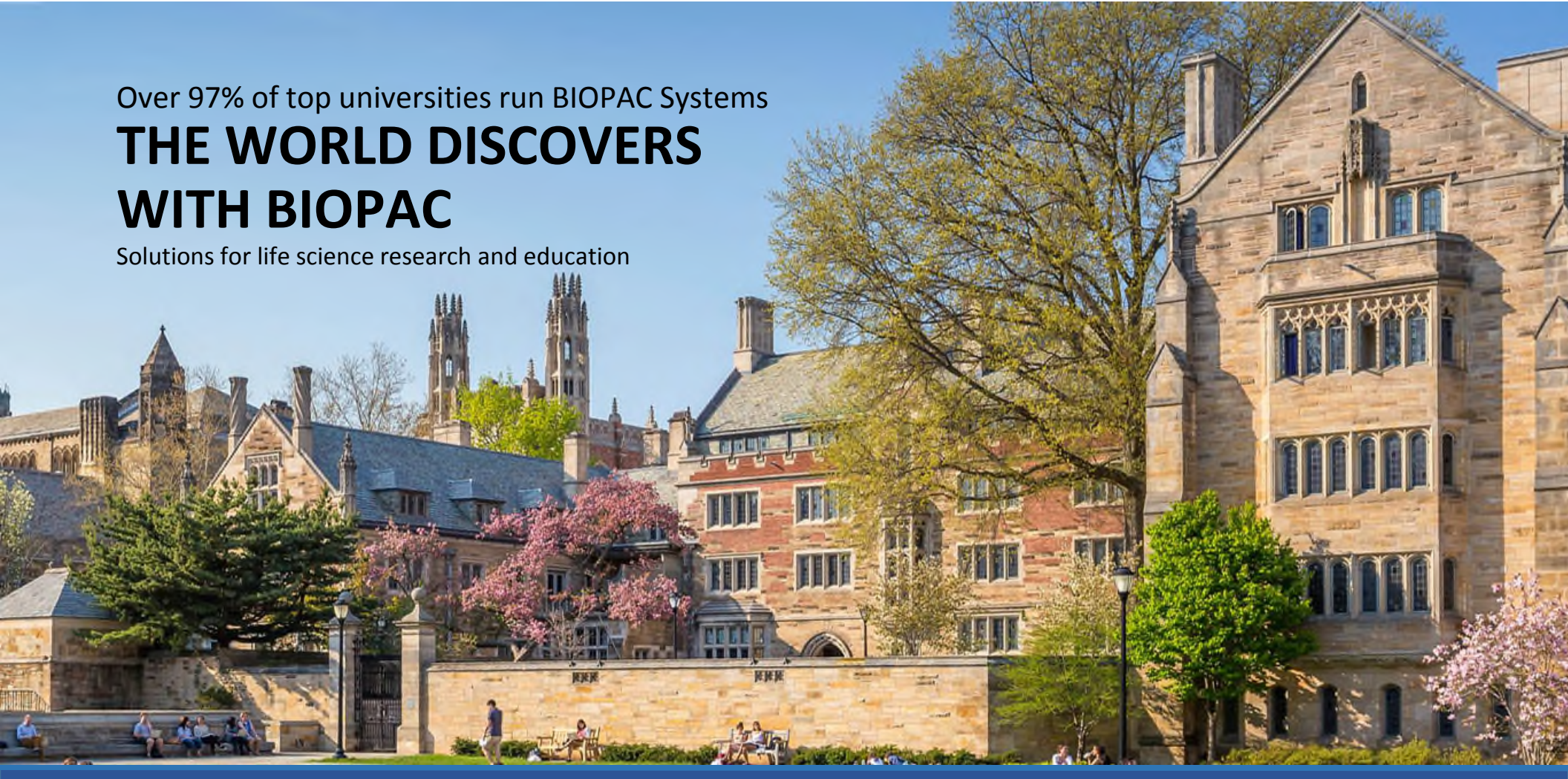
Over 97% of top universities run BIOPAC Systems

THE WORLD DISCOVERS WITH BIOPAC

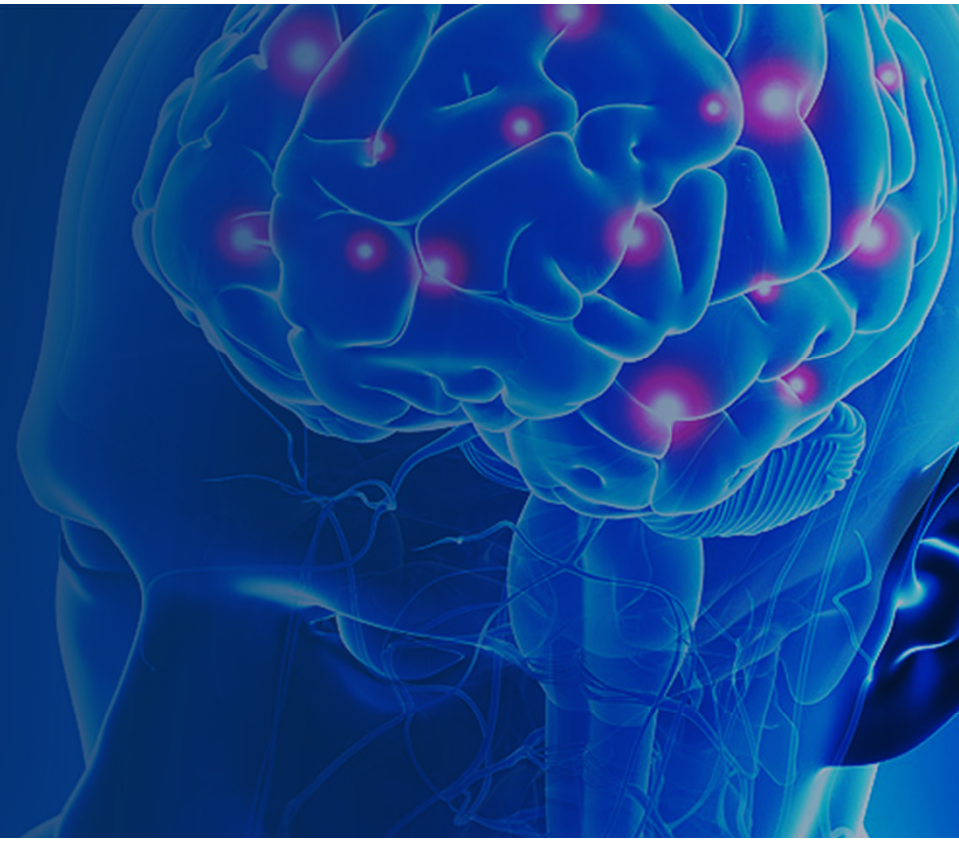
Solutions for life science research and education



THE WORLD DISCOVERS WITH BIOPAC

BIOPAC systems are cited over 27,000

THE WORLD DISCOVERS WITH BIOPAC



BIOPAC Systems cited ~4,000 times for EEG

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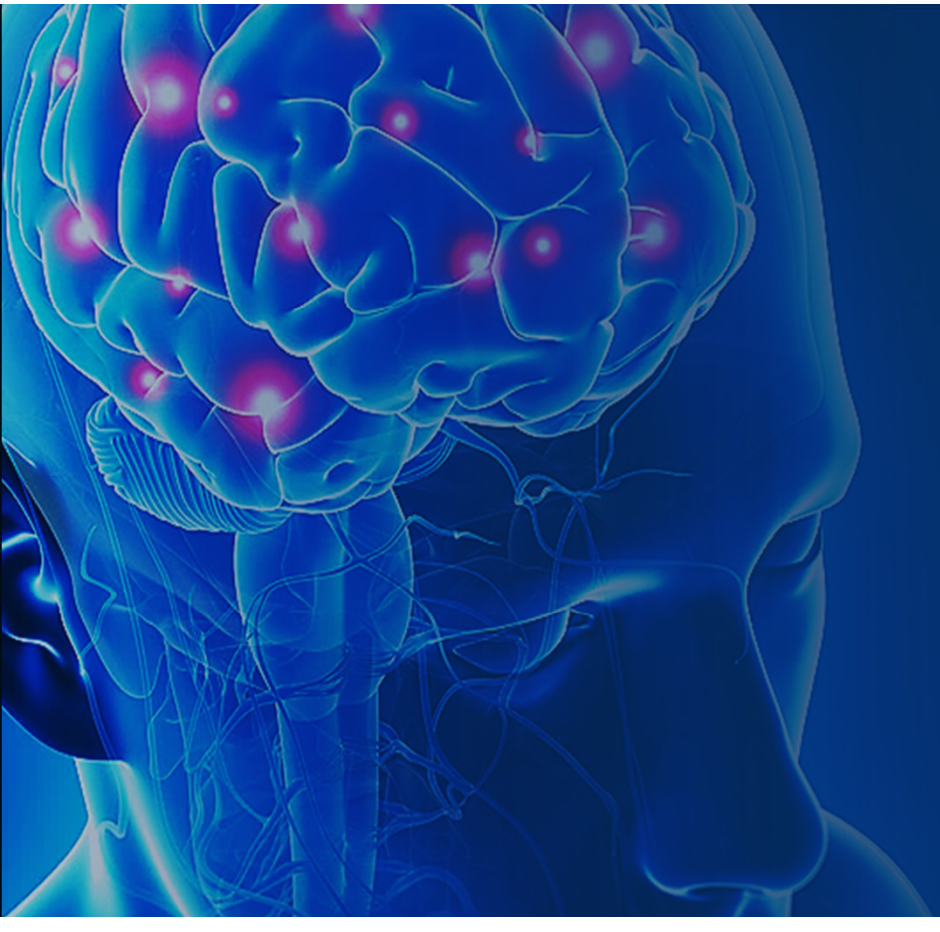

INTRODUCTION

Fundamentals of EEG

Example 1 – dual channel tethered EEG with EDA

Example 2 – B-Alert wireless EEG with Cognitive States Metrics

Example 3 – Mobita 32 channel wireless EEG

Summary

Q&A

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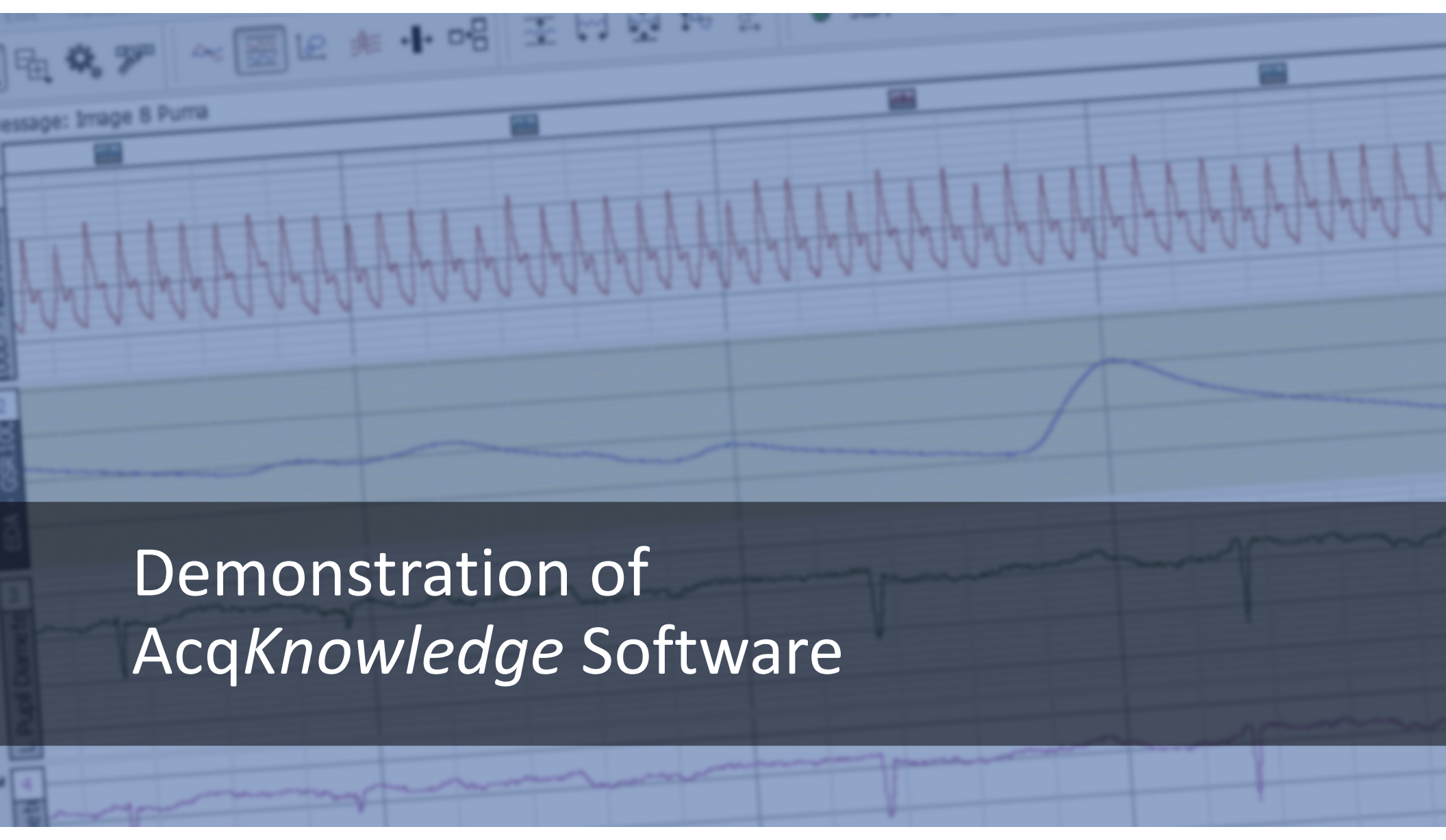


Demonstration of Acq*Knowledge* Software

Combining EEG with other Physiological Signals

MP160 System

16-Channels of Tethered or Wireless Signals

BioNomadix

Wireless Physiological Data

MP36R System

4-Universal Channels

Mobita System

32-Channel EEG / Biopotentials

B-Alert System

9-Channels of EEG and Cognitive States Metrics

Background

In 1929, an German physician named Hans Berger discovered that electrodes placed on the scalp could detect various patterns of electrical activity. After verifying that the recordings were indeed recording from the brain, and were not artifacts of muscle or scalp, scientists began to study these “brain waves.” Today, the EEG is still a medically useful recording for brain function. In medical and basic research, the correlation of particular brain waves with sleep phases, emotional states, psychological profiles, and types of mental activities is ongoing.

What is EEG?

EEG records the electrical activity of the brain using surface electrodes and provides a noninvasive way to measure brain function and regional brain activity. The EEG signal is made up of different frequency components and the amplitude of the signal varies in the different frequency bands.

Five simple periodic rhythms recorded in the EEG are alpha, beta, delta, theta, gamma

Rhythm	Typical Frequencies (Hz)
alpha	8-13
beta	13-30
delta	1-5
theta	4-8
gamma	>32

How do you record EEG?

EEG is recorded by placing electrodes on the scalp of the subject. The placement of the electrodes is important to ensure that you are recording data from the correct location when comparing and reporting results.

Locations

F7 near centers for rational activities

Fz near intentional and motivational centers

F8 close to sources of emotional impulses

C3,C4,Cz deal with sensory and motor functions

T3 and T4 emotional process

T5 and T6 certain memory functions

O1 and O2 for primary visual areas

Labels

Letters = General Zones

F - Frontal

C - Central

T - Temporal

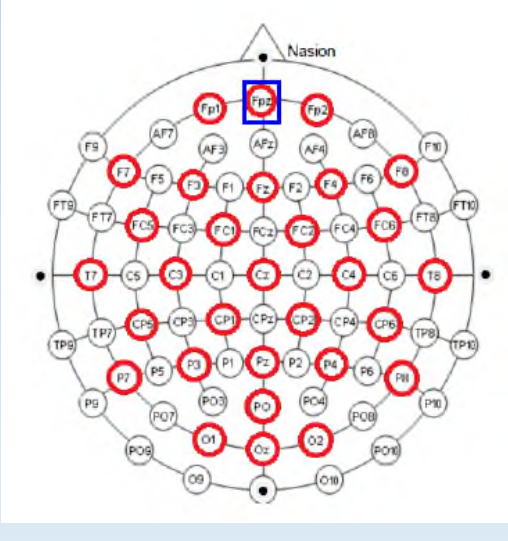
P - Parietal

O – Occipital

Numbers = Hemispheres

Odd – Left

Even – Right



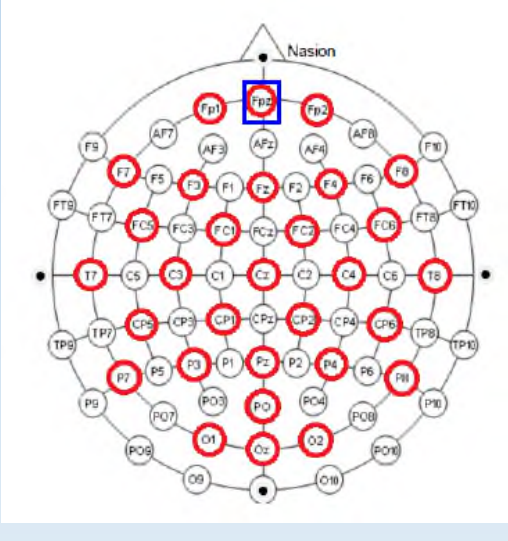
How do you record EEG?

Electrodes are typically referenced to a physical electrode or site –

- vertex (Cz)
- linked-ears
- linked-mastoids
- ipsilateral-ear
- contralateral-ear
- C7 reference
- bipolar references

Reference-free techniques

- common average reference
- weighted average reference



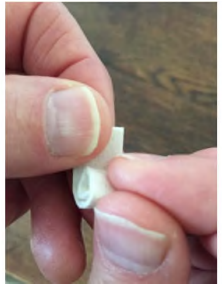
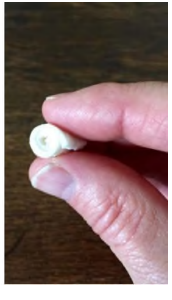
Mobita Wireless EEG System

Mobita

- 32- channels
- Telemetry or logging
- Accelerometer
- Trigger channel
- H2O electrodes

Mobita Wireless EEG System

1…

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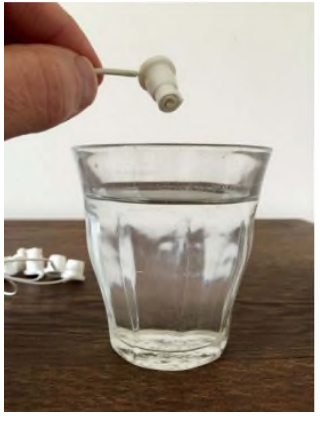
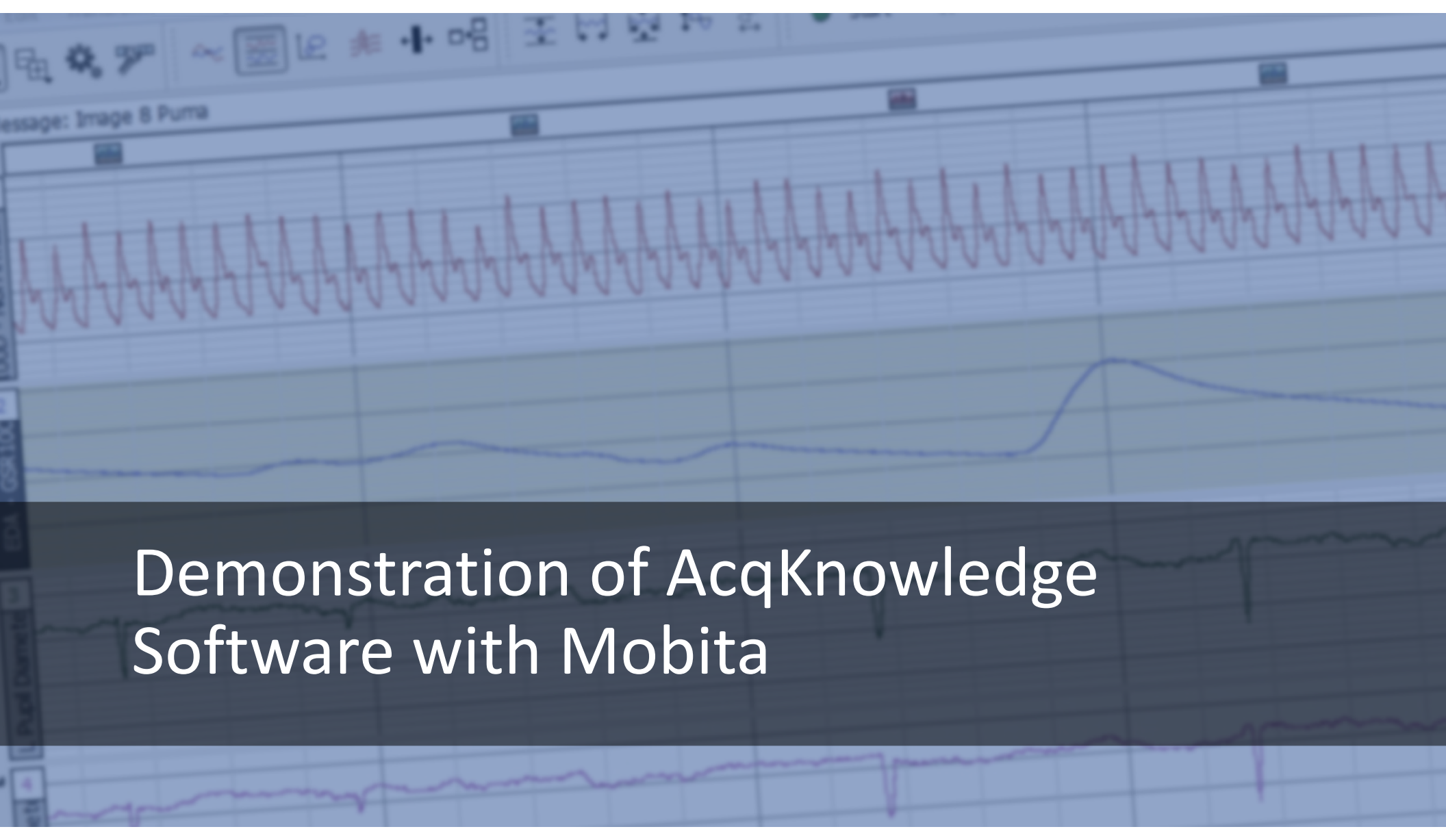
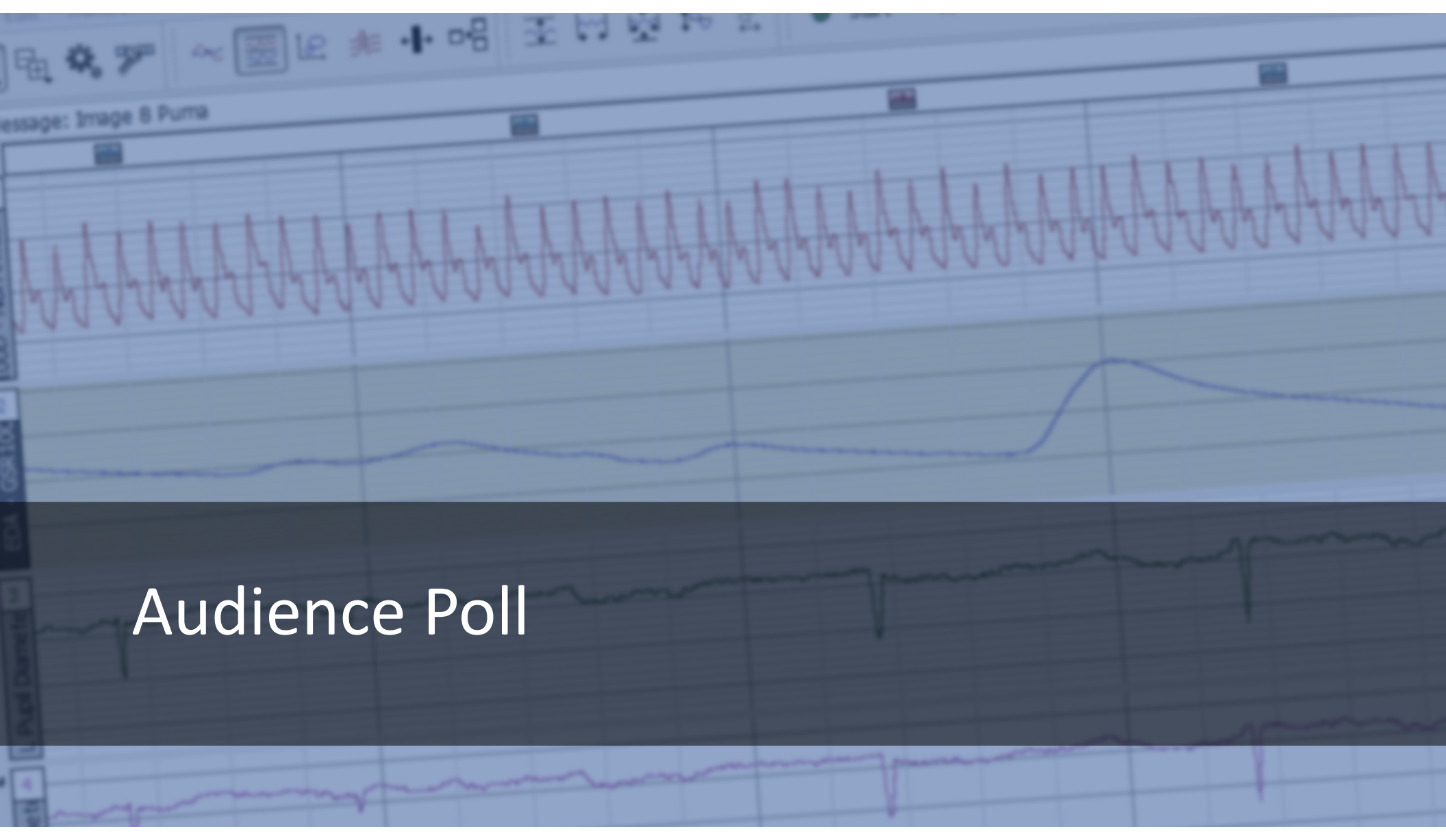
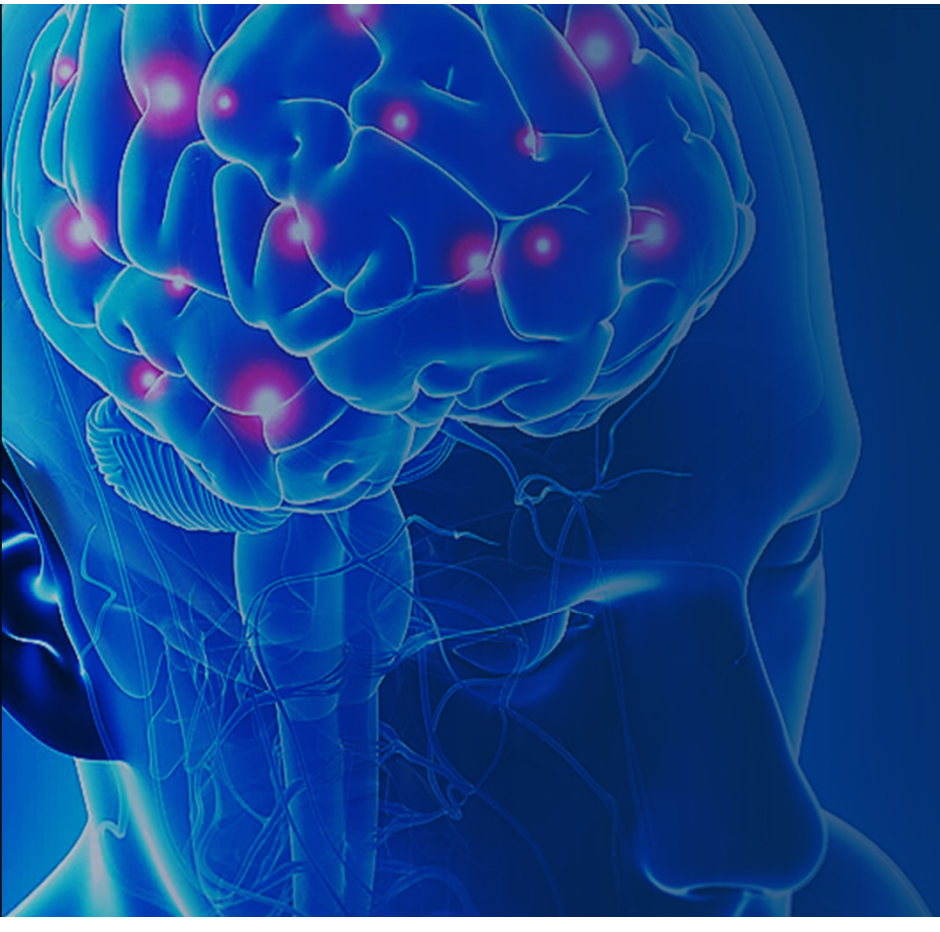


Demonstration of AcqKnowledge Software with Mobita


Audience Poll



SUMMARY

Different locations – placement critical

Different electrode options – Ag/AgCl, Sn, Au, H2O

Bipolar recording - physical or average reference

Frequency bands – Alpha, Beta, Theta, Delta, Gamma

Impedance – keep low and avoid noise

Synchronization with other signals

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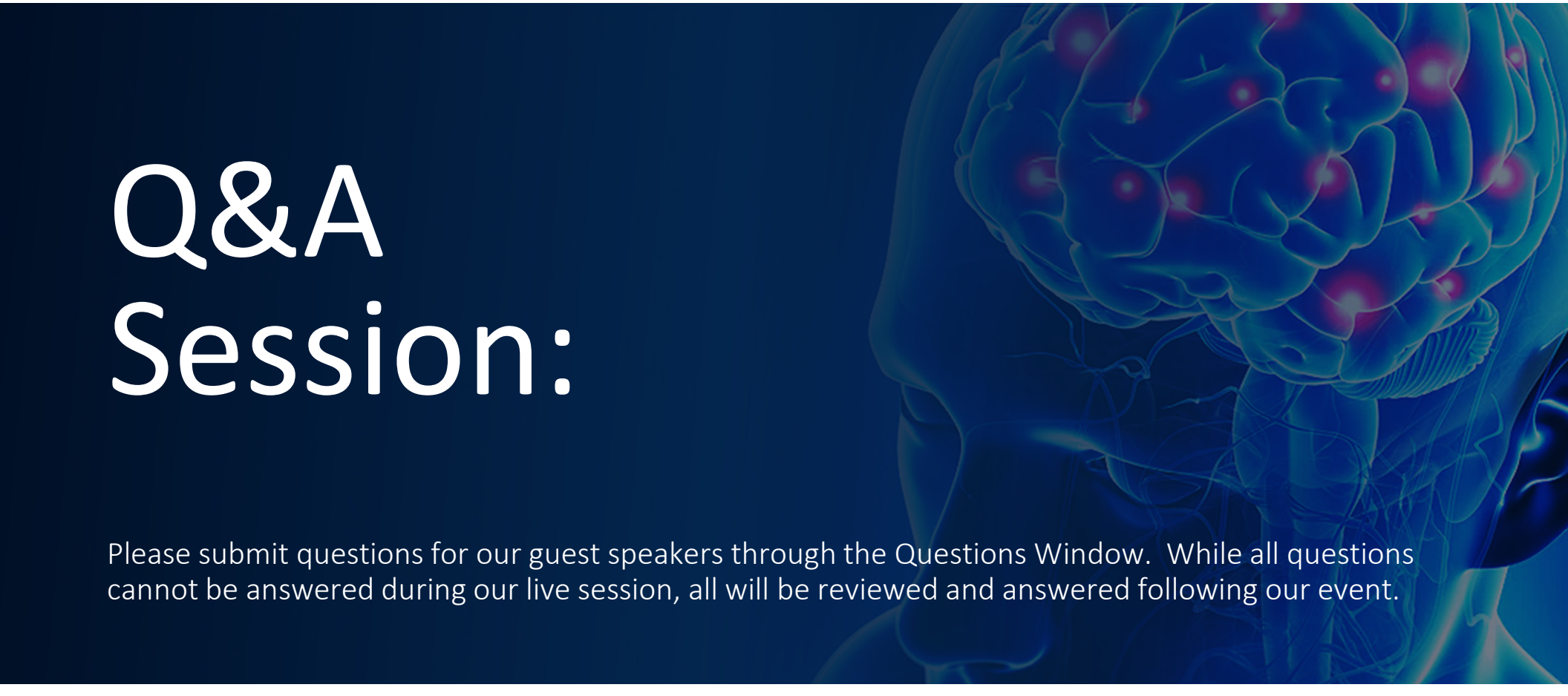
Q&A Session:



Please submit questions for our guest speakers through the Questions Window. While all questions cannot be answered during our live session, all will be reviewed and answered following our event.

-- Thank you for your participation

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Next Webinar: October 26

Future of Physiology Research Technology & Sneak Peek

- Impact of technology on scientific discovery and what that means for researchers
- Factors when selecting wired vs wireless systems
- How technology can save researchers time while producing high quality results
- LIVE DEMO of BIOPAC's groundbreaking new system

https://www.biopac.com/events/webinar-sneak-peek/

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Thank you for your time and attention!

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