Measuring the HIV Reservoir BINGO Review Activity

Objectives
- Describe the differences in current technologies available for measuring the HIV reservoir
- Discuss the risk and benefit of each technology

Methods
Small group work and large group discussion

Materials Required
- Technology Descriptions
- Reservoir Boards
- Container for Technology Descriptions
- Flip chart
- Markers
- Tape
- Scissors
- Prize(s) for winners (optional)

To Prepare for the Session
- Review the content in the slides and additional resources
- Make a copy of the Technology Descriptions and follow the instructions provided.
- Make copies of the Reservoir BINGO Boards. You’ll need a board for each participant. Five boards are provided. For groups of more than five, either make multiple copies (although some players will have identical boards, they may play them differently) or have participants share a board and play as a team.

To Conduct the Session
Step 1
- Pass out a Reservoir BINGO Board to each participant, and tell participants that they are going to play a game called “Reservoir BINGO” based on the information they learned in the presentation.
- Hold up the container and explain that each slip of paper has a description of a technology used to measure the reservoir.
- Tell participants that you will be drawing descriptions from the container, one at a time, and reading them out loud.
- Those who can name the corresponding technology should raise their hand, and you will call on the first person whose hand you see.
- If their responses is correct, all participants should mark the corresponding “X”, filling in only one space at a time.
- Explain that the participants can place an “X: on any square that says “free space”.
- The first person to form a winning pattern—a straight horizontal line—should call out “BINGO”
Step 2
- Start the game by drawing the first piece of paper.
- When a participant offers an answer, ask the other participants if the answer is correct.
- Continue game until someone wins or all papers have been drawn.

Step 3
- Congratulate the winner of the game and all participants for their valuable input.
- Award any prizes
- Debrief by asking participants the following question
  - What are the patient/participant-specific considerations for each of these assays?
- Facilitate any discussion that follows.
- Wrap up the session by asking if there are any additional questions about the current technologies used in measuring the reservoir.
Technology Descriptions

**Trainer’s Instruction:** Print pages 3-4, cut along the dotted lines, and fold the individual strips of paper into small squares. Place them in a hat, bowl, or other container for random drawing during the GPP Principles Bingo game.

---

**Virus is present but not active in a cell**

---

**No consensus on cellular markers in immune cells**

---

**Established very early in infection**

---

**This assay cannot distinguish defective vs. intact provirus.**

---

**This assay is the only assay that can currently be used in resource limited settings**

---

**This assay measures the amplification of DNA using fluorescence**

---

**This assay is used to diagnose infants**

---

**This assay can detect RNA below the undetectable limit in current FDA assays.**

---

**This assay uses a plasma samples to test for viral RNA**

---

**This assay uses protein markers to determine the presence of virus**

---

**This assay can assess ongoing viral replication in patients using 2-LTR as a marker**

---

**Limiting dilution is a major feature of this assay.**

---

**Inducible RNA can be measured by this assay.**
This assay activates resting CD4 cells to measure virus.

This assay requires at least two weeks to complete.

This assay depicts the smallest version of the reservoir.

This assay requires 200 mL of whole blood from participants in order to purify enough resting CD4+ T cells.

Resource limited settings, including research settings that conduct clinical trials, would have the most difficulty implementing this.
Virus is present but not active in a cell **Answer: Viral reservoir**

No consensus on cellular markers in immune cells **Answer: viral reservoir**

Established very early in infection **Answer: viral reservoir**

This assay cannot distinguish defective vs. intact provirus. **Answer: PCR**

This assay is the only assay that can currently be used in resource limited settings. **Answer: SCA**

This assay is used to diagnose infants **Answer: qPCR**

This assay measures the amplification of DNA using fluorescence **Answer: qPCR**

This assay can detect RNA below the undetectable limit in current FDA assays using only a single patient’s cells. **Answer: SCA**

This assay uses a plasma samples to test for viral RNA **Answer: SCA**

This assay can assess ongoing viral replication in patients using 2-LTR as a marker **Answer qPCR**

This assay uses protein markers to determine the presence of virus **Answer: TILDA**

Limiting dilution is a major feature of this assay. **Answer: TILDA**

Inducible RNA can be measured by this assay. **Answer: TILDA**

This assay activates resting CD4 cells to measure virus **Answer: QVOA**

This assay requires at least two weeks to complete **Answer: QVOA**

This assay depicts the smallest version of the reservoir. **Answer: QVOA**

This assay requires 200 mL of whole blood from participants in order to purify enough resting CD4+ T cells. **Answer: QVOA**

Resource limited settings, including research settings that conduct clinical trials, would have the most difficulty implementing this. **Answer: QVOA**
Measuring the Reservoir BINGO Boards

<table>
<thead>
<tr>
<th>Viral Reservoir</th>
<th>QVOA</th>
<th>TILDA</th>
<th>SCA</th>
<th>Viral Reservoir</th>
</tr>
</thead>
<tbody>
<tr>
<td>TILDA</td>
<td>qPCR</td>
<td>QVOA</td>
<td>SCA</td>
<td>PCR</td>
</tr>
<tr>
<td>FREE SPACE</td>
<td>SCA</td>
<td>qPCR</td>
<td>Viral Reservoir</td>
<td>TILDA</td>
</tr>
<tr>
<td>PCR</td>
<td>Viral Reservoir</td>
<td>SCA</td>
<td>TILDA</td>
<td>qPCR</td>
</tr>
<tr>
<td>QVOA</td>
<td>QVOA</td>
<td>qPCR</td>
<td>QVOA</td>
<td>SCA</td>
</tr>
<tr>
<td>QVOA</td>
<td>SCA</td>
<td>qPCR</td>
<td>QVOA</td>
<td>SCA</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>qPCR</td>
<td>QVOA</td>
<td>SCA</td>
<td>Viral Reservoir</td>
<td>QVOA</td>
</tr>
<tr>
<td>PCR</td>
<td>Viral Reservoir</td>
<td>FREE SPACE</td>
<td>Viral Reservoir</td>
<td>QVOA</td>
</tr>
<tr>
<td>TILDA</td>
<td>qPCR</td>
<td>SCA</td>
<td>PCR</td>
<td>qPCR</td>
</tr>
<tr>
<td>PCR</td>
<td>QVOA</td>
<td>SCA</td>
<td>qPCR</td>
<td>Viral Reservoir</td>
</tr>
<tr>
<td>PCR</td>
<td>SCA</td>
<td>qPCR</td>
<td>TILDA</td>
<td>QVOA</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>qPCR</td>
<td>PCR</td>
<td>Viral Reservoir</td>
<td>PCR</td>
<td>FREE SPACE</td>
</tr>
<tr>
<td>TILDA</td>
<td>QVOA</td>
<td>qPCR</td>
<td>qPCR</td>
<td>Viral Reservoir</td>
</tr>
<tr>
<td>QVOA</td>
<td>qPCR</td>
<td>QVOA</td>
<td>Viral Reservoir</td>
<td>SCA</td>
</tr>
<tr>
<td>SCA</td>
<td>TILDA</td>
<td>SCA</td>
<td>TILDA</td>
<td>Viral Reservoir</td>
</tr>
<tr>
<td></td>
<td>PCR</td>
<td>TILDA</td>
<td>qPCR</td>
<td>QVOA</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>QVOA</td>
<td></td>
<td>FREE SPACE</td>
<td>PCR</td>
<td>Viral Reservoir</td>
</tr>
<tr>
<td>SCA</td>
<td>qPCR</td>
<td>Viral Reservoir</td>
<td>PCR</td>
<td>SCA</td>
</tr>
<tr>
<td>qPCR</td>
<td>QVOA</td>
<td>QVOA</td>
<td>Viral Reservoir</td>
<td>TILDA</td>
</tr>
<tr>
<td>TILDA</td>
<td>SCA</td>
<td>qPCR</td>
<td>TILDA</td>
<td>QVOA</td>
</tr>
<tr>
<td>QVOA</td>
<td>FREE SPACE</td>
<td>TILDA</td>
<td>Viral Reservoir</td>
<td>SCA</td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
<td>-------</td>
<td>-----------------</td>
<td>--------</td>
</tr>
<tr>
<td>Viral Reservoir</td>
<td>TILDA</td>
<td>Viral Reservoir</td>
<td>PCR</td>
<td>qPCR</td>
</tr>
<tr>
<td>SCA</td>
<td>qPCR</td>
<td>QVOA</td>
<td>QVOA</td>
<td>SCA</td>
</tr>
<tr>
<td>TILDA</td>
<td>SCA</td>
<td>qPCR</td>
<td>Viral Reservoir</td>
<td>SCA</td>
</tr>
<tr>
<td>qPCR</td>
<td>TILDA</td>
<td>SCA</td>
<td>qPCR</td>
<td>QVOA</td>
</tr>
</tbody>
</table>