1. Joseph Priestley (1771): Discovery of Oxygen Release

- **Experimental Setup:**
    1. Placed a burning candle and a mouse in a closed container.
    2. Observed the extinguishing of the candle and the inability of the mouse to survive.
    3. Introduced a sprig of mint into the container.
    4. Noted the revival of the candle flame and the mouse's ability to survive.
- **Objective:**
    - To explore the impact of a plant (mint) on the air within a closed environment containing a burning candle and a living organism (mouse).
- **Conclusion:**
    - Discovered that plants release a substance (later identified as oxygen) capable of restoring air "injured" by combustion or respiration.

2. Jan Ingenhousz (1779): Light Dependency of Oxygen Release

- **Experimental Setup:**
    1. Exposed plants to both light and darkness.
    2. Monitored oxygen release in each condition.
- **Objective:**
    - To investigate the role of light in the process of oxygen release by plants.
- **Conclusion:**
    - Concluded that oxygen release by plants only occurs in the presence of light.

3. Julius von Sachs (1864): Role of Chlorophyll

- **Experimental Setup:**
    1. Studied the formation of starch in plants.
    2. Examined the role of chloroplasts in this process.
- **Objective:**
    - To determine the role of chlorophyll in the synthesis of starch by plants.
- **Conclusion:**
    - Established that chlorophyll is crucial for starch formation in plants and that the process occurs in chloroplasts.

4. Theodor Wilhelm Engelmann (1882): Wavelengths and Oxygen Release

- **Experimental Setup:**
    1. Used a spectrum of light.
    2. Exposed aerobic bacteria to different wavelengths.
- **Objective:**
    - To investigate the impact of different wavelengths of light on photosynthetic activity.
- **Conclusion:**

- Demonstrated that bacteria congregated in areas with the most oxygen production, indicating the influence of different light wavelengths.

5. Melvin Calvin (Calvin Cycle, 1950s): Radioactive Tracing

- **Experimental Setup:**
  1. Traced the movement of carbon using radioactive carbon-14.
  2. Investigated the pathways of carbon fixation.
- **Objective:**
  - To identify the series of chemical reactions involved in carbon fixation during photosynthesis.
- **Conclusion:**
  - Established the Calvin Cycle as the pathway for carbon fixation in photosynthesis.

6. Cornelis van Niel (1930s-1950s): Source of Oxygen

- **Experimental Setup:**
  1. Studied photosynthetic bacteria.
  2. Investigated the source of oxygen released during photosynthesis.
- **Objective:**
  - To determine whether oxygen is derived from carbon dioxide or water during photosynthesis.
- **Conclusion:**
  - Proposed that oxygen released during photosynthesis comes from water, not carbon dioxide.

7. Andrew Benson, James Bassham, and Calvin J. Aronoff (Benson-Calvin Pathway, 1950s): Carbon Fixation Pathway

- **Experimental Setup:**
  1. Investigated the pathway of carbon fixation.
  2. Traced the conversion of carbon dioxide into sugars.
- **Objective:**
  - To provide detailed insights into the series of chemical reactions involved in carbon fixation during photosynthesis.
- **Conclusion:**
  - Developed the Benson-Calvin pathway, offering a comprehensive understanding of how carbon is fixed and converted into sugars during photosynthesis.