Trailblazers in Science: Women, STEM, and the Nobel Prize

The history of women in STEM is a story of brilliance intertwined with systemic exclusion. While women have contributed profoundly to science, their visibility and recognition have often been limited. This imbalance is starkly visible in the history of the Nobel Prize, one of the most prestigious markers of scientific achievement. Since its inception in 1901, very few women have been awarded in the STEM categories. **Marie Curie**, the first woman to win a Nobel Prize, remains an extraordinary figure, having won in **Physics (1903)** and later in **Chemistry (1911)** for her work on radioactivity. Her achievements, alongside those of other pioneers such as **Irène Joliot-Curie**, **Dorothy Hodgkin**, and **Barbara McClintock**, illustrate the depth of women's contributions despite pervasive barriers to education, funding, and professional networks.

To put these accomplishments in context, women still represent **less than 6 % of Nobel laureates in Physics** and fewer than **15 % in Chemistry and Medicine**. These figures do not reflect a lack of ability but rather the cumulative effects of structural barriers, including historical exclusion from universities, limited access to laboratories, and gendered norms that restricted career advancement. Moreover, research shows that collaborative contributions by women have often been undervalued, leading to disproportionate recognition of male colleagues. These patterns mirror findings from EU research on women in STEM, which shows that women are under-represented in senior research roles and leadership positions, even when educational attainment is comparable to men.

Despite these challenges, the trajectory is gradually changing. Women are now participating in doctoral research and early-career positions at unprecedented levels, supported by European strategies promoting **gender equality in research and innovation** (European Commission, 2020). Increasing visibility of women scientists, inclusive nomination processes, and targeted funding programs are all contributing to a more equitable landscape. Recognition matters not only symbolically but also in inspiring the next generation of girls to envision careers in STEM. When young women see trailblazers like Curie or McClintock, they can imagine themselves making meaningful contributions, thereby addressing both the confidence and participation gaps identified in EU research.

In narrating the story of women and the Nobel Prize, we see both the historical limitations and the transformative potential of inclusion. The milestones achieved by pioneering women serve as a reminder of what is possible when talent meets opportunity, and they underscore the ongoing need for policies and interventions that ensure equal access, recognition, and support in STEM. Projects such as **ST3AM** build upon this legacy by offering inclusive, hands-on STEAM education, mentorship networks, and practical exposure to science and technology for young women, aiming to nurture the next generation of innovators and researchers across Europe.