

A close-up photograph of a Black woman with her hair pulled back, wearing a white lab coat and blue gloves. She is looking intently through the eyepiece of a microscope. The background is a blurred laboratory setting.

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Women in Science and Technology: Breaking Boundaries and Building the Future

Throughout history, women have played an instrumental role in shaping the world through scientific innovation and technological advancement. Despite facing numerous barriers, women have consistently contributed groundbreaking ideas, inventions, and discoveries in fields traditionally dominated by men. Today, women in science and technology are not only continuing to push boundaries but also transforming entire industries — from healthcare to space exploration.

The Impact of Women in Science and Technology

1. Redefining Innovation

Women in science and technology bring fresh perspectives to problem-solving and innovation. Their unique contributions are evident in the creation of life-saving technologies, sustainable solutions, and cutting-edge research in areas such as artificial intelligence, renewable energy, and medical science.

2. Shaping Future Industries

Women have significantly influenced emerging industries like biotechnology, space exploration, cybersecurity, and data science. Female leaders in tech companies, such as Marissa

Mayer (former CEO of Yahoo) and Ginni Rometty (former CEO of IBM), have paved the way for other women to follow in their footsteps and transform corporate culture and product development in the tech sector.

3. Breaking the Glass Ceiling

While the tech and science fields have historically been male-dominated, women are increasingly making their mark. Pioneers like Marie Curie, Ada Lovelace, and Grace Hopper have inspired countless women to pursue careers in STEM (Science, Technology, Engineering, and Mathematics), shattering the barriers that once restricted their access to these fields.

The Challenges Women Face in Science and Technology

1. Gender Bias and Under Representation

Despite the growing number of women entering STEM fields, women are still underrepresented, particularly in leadership and research positions. For example, only about 28% of the global workforce in science, technology, engineering, and mathematics is female. Women also face biases in hiring, funding, and recognition compared to their male counterparts.

2. The Gender Pay Gap

Women in science and technology continue to face significant pay gaps in comparison to men in similar roles. Women are often underpaid for their work in innovation,

research, and technology development, and there are fewer women in top-paying roles within tech companies and research institutions.

3. Workplace Culture and Support

Many women in science and technology report workplace cultures that are not supportive of their advancement. Lack of mentorship, limited access to funding, and stereotypes about their capabilities contribute to the challenges women face in rising to leadership positions. The work-life balance challenge is also heightened for women who often juggle careers with familial responsibilities.

The Importance of Diversity in STEM

1. Diverse Perspectives Lead to Better Solutions

Studies have shown that diversity — especially gender diversity — enhances problem-solving abilities, creativity, and innovation in research and development. Gender-diverse teams tend to produce better, more creative solutions to complex scientific and technological challenges. When women are part of the team, the innovations are often more inclusive, addressing the needs of a broader audience.

2. Mentorship and Encouragement for the Next Generation

Women who succeed in science and technology serve as role models and mentors for the next generation of female scientists and engineers. Initiatives like Girls Who Code and Women in Technology have been instrumental in fostering

young female talent by providing mentorship, resources, and a sense of belonging in these fields.

Aura's Role in Supporting Women in Science and Technology

Aura Solution Company Limited, through initiatives by the Auradevi Foundation and Aura Endowment, is proud to sponsor programs, mentorships, and events aimed at empowering women in science, technology, and engineering. Aura's contributions include:

1. **Scholarships for Women in STEM:** Aura has dedicated funds for women pursuing degrees in engineering, technology, and science fields, particularly in underrepresented regions.
2. **Promoting Women in Tech Leadership:** Through its strategic partnerships with leading tech companies and educational institutions, Aura supports women in leadership roles, including executive training, leadership workshops, and networking opportunities.
3. **Research Grants for Female Scientists:** Aura provides grants and funding for research projects led by women, particularly those working on innovative, sustainable technologies or health solutions.
4. **Community Programs:** By sponsoring programs like Girls Who Code in Thailand and STEM camps for young girls, Aura helps foster interest in science and technology careers from an early age.
5. **Visibility and Advocacy:** Through its platforms like Aurapedia, Aura highlights the accomplishments of female scientists and technologists, providing them

with the visibility they deserve to inspire future generations.

Conclusion

Women in science and technology are not just shaping the future — they are driving it. Despite the challenges they face, women in these fields continue to demonstrate remarkable resilience, creativity, and leadership. By fostering a more inclusive environment and providing targeted support, we can ensure that women continue to break barriers and contribute to the most important innovations of our time. Aura Solution Company Limited is committed to sponsoring and supporting initiatives that advance women's participation in these critical sectors, ensuring a more equitable future for all.

CHALLENGES

Challenges Women Face in Science and Technology

1. Gender Bias and Stereotyping

One of the most pervasive challenges women face in science and technology is gender bias, both overt and unconscious. This manifests in various ways:

- Stereotypical perceptions about women's ability to perform in technical roles or leadership positions often hold them back. These biases are particularly strong in fields like engineering, data science, and IT, where women are often underestimated.
- Women in male-dominated industries, like tech startups, are frequently overlooked for promotions or leadership opportunities due to unconscious gender

stereotypes that equate competence with traditionally male characteristics.

Despite significant strides in gender equality, such biases continue to persist and shape decisions around hiring, promotions, and team assignments.

2. Underrepresentation in Leadership

Though women now represent a larger portion of the workforce in science and technology, their representation at senior and leadership levels remains low.

- For instance, women represent only 28% of the global workforce in STEM fields, and this percentage decreases sharply in leadership roles, such as CEO, CTO, or founder of tech companies.
- Access to leadership positions often remains closed off for women due to longstanding biases and lack of mentorship. These women are frequently forced to prove themselves more than their male counterparts in order to be considered for higher-level roles.

Women also report difficulties in advancing to senior positions due to a combination of workplace culture, limited career support, and underrepresentation in decision-making bodies.

3. The Gender Pay Gap

Despite working in the same roles, women in science and technology consistently earn less than men. According to a study by the World Economic Forum, the global gender pay gap is approximately 20%, with women earning just 80 cents for every dollar a man makes.

- This wage disparity exists across all levels, from entry-level roles to executive positions.
- Women in senior positions often report a lack of transparency in salary discussions, which perpetuates the pay gap. The reasons behind this gap include discriminatory salary policies, fewer women in senior leadership, and unequal access to high-paying projects.

4. Work-Life Balance Challenges

In industries where long hours and intense dedication are often expected, many women face an added pressure to balance professional success with family responsibilities.

- The concept of “having it all” — excelling at work while managing family responsibilities — presents a real challenge. Women in science and technology often face expectations to sacrifice their personal lives or scale back their career ambitions to meet family obligations, which may limit their career advancement.
- Moreover, lack of parental leave or flexible work arrangements in many tech companies means that women have to juggle multiple roles, which can lead to burnout, reduced productivity, and even a decision to leave the field entirely.

5. Limited Access to Mentorship and Networking Opportunities

Mentorship is a critical component in career development, yet women in STEM often struggle to find mentors who can help them navigate the complex career landscape.

- Mentorship networks in science and technology are often male-dominated, and women may find it difficult to find senior female mentors who have faced similar challenges.
- Moreover, women are less likely to be invited to networking events, industry conferences, or informal work gatherings, which are often where important professional relationships and career-advancing opportunities are formed.

The lack of mentorship and networking opportunities also means that women in science and technology may miss out on career guidance, advice, and collaborative ventures, which are critical for climbing the professional ladder.

6. Imposter Syndrome

Many women in STEM face imposter syndrome, a phenomenon where successful professionals doubt their accomplishments and feel they don't belong in their role, despite evident success.

- Imposter syndrome is often exacerbated in male-dominated fields like engineering, mathematics, and computer science, where women may feel as though they are intruders or not qualified for their positions, even when they are highly skilled.
- This self-doubt can prevent women from taking on new challenges, asking for promotions, or even

seeking out new opportunities that could advance their careers.

7. Cultural and Societal Expectations

Cultural and societal expectations continue to present barriers for women in science and technology. For example, women in certain regions may face:

- Pressure to conform to traditional gender roles, including expectations to focus on domestic duties rather than pursuing advanced careers.
- Cultural stigmas that discourage women from asserting themselves in leadership roles or from pursuing careers in fields that are deemed "masculine."
- Women who break these traditional norms often face criticism or isolation for not conforming to gendered expectations.

This creates an environment where many women feel they must constantly prove their worth or justify their place in the workplace, leading to emotional exhaustion and a lack of motivation.

8. Lack of Policy Support

Many companies still lack policies that actively support women's careers in science and technology. These policies could include:

- Gender equality in hiring practices, performance reviews, and promotion policies.
- Workplace flexibility for women managing both their career and personal life.
- Parental leave and supportive childcare options to help women return to their careers after starting a family.

Without these kinds of policies in place, companies can inadvertently perpetuate gender imbalances, making it difficult for women to progress in their careers, particularly in fields like STEM, where work-life balance is crucial.

9. Resistance to Change

Some institutions and individuals in science and technology sectors are resistant to gender equality initiatives, either through passive indifference or active opposition.

- Women in leadership roles often face hostility or dismissiveness from male colleagues who are uncomfortable with changes in traditionally male-dominated sectors.
- This resistance can be particularly challenging for women who are trying to create inclusive environments, as they may be met with an unwillingness to address gender inequalities at all levels.

10. Lack of Female Representation in Research and Policy

Women are often underrepresented in scientific research teams, as well as in policy-making bodies that influence funding and research agendas. This means that the challenges women face in science and technology may go unaddressed by decision-makers who do not have direct experience with gendered barriers.

How Aura Solution Company Limited is Contributing to the Change

At Aura Solution Company Limited, we understand that gender diversity is essential for scientific innovation and technological advancement. Through initiatives and partnerships sponsored by Auradevi Foundation, Aura is actively supporting women in science and technology in the following ways:

1. **Sponsorship of Women in STEM Programs:** Aura invests in scholarships, research grants, and mentorship programs for women pursuing careers in science, technology, engineering, and mathematics.
2. **Advocacy for Gender Equality:** Aura works with industry leaders to promote inclusive workplace cultures, offering gender equality workshops and training sessions for corporations to adopt best practices.
3. **Visibility for Women Leaders in Science:** Through platforms like Aurapedia, Aura highlights the achievements of female scientists, tech innovators, and entrepreneurs, providing them with the recognition they deserve to inspire future generations.
4. **Policy Support:** Aura advocates for policy reforms that create a more inclusive environment in tech and

research, including flexible work policies, parental leave, and supportive career frameworks for women.

Conclusion

While significant strides have been made, women in science and technology continue to face numerous challenges. Gender biases, underrepresentation in leadership, and workplace inequalities are just a few of the hurdles women must overcome. However, with continued support, mentorship, and policy change, women will be able to break down these barriers and drive transformational change across these fields. Aura Solution Company Limited is proud to sponsor programs that promote gender equality and empower women in STEM, paving the way for a more inclusive and innovative future.

WOMEN AS SCIENTIST

The role of women in science has evolved dramatically over the last century, though they still face significant challenges. Historically, women were often excluded from scientific fields, their contributions overlooked or dismissed. Today, however, women in science are not only making groundbreaking discoveries but also inspiring the next generation of scientists.

This article will explore the crucial role women play in the sciences, the challenges they face, and the steps needed to further promote gender equality in scientific careers.

The Historical Context

For much of history, women were systematically excluded from scientific research and education. Women like Marie Curie, who won two Nobel Prizes in Physics and Chemistry, and Rosalind Franklin, whose work on X-ray crystallography was crucial to understanding DNA, were exceptions in a male-dominated field. Despite their pioneering contributions, women often faced barriers such as lack of funding, limited access to educational opportunities, and blatant sexism from their male counterparts.

The struggle for equal representation in science continued well into the 20th century. While women slowly began to enter fields like biology, chemistry, and physics, their contributions were often diminished, and they were denied key positions in academia and industry.

Women in Science Today: Breaking the Glass Ceiling

In the 21st century, the landscape of women in science has dramatically shifted. Women have increasingly occupied roles once reserved for men, from leading high-profile research projects to heading major scientific organizations and institutes. However, despite the progress made, women still represent underrepresented groups in many scientific fields.

Women now hold some of the highest positions in science and technology, such as female CEOs of scientific companies, scientific directors of government agencies, and leading researchers in academia. Women like Frances Arnold, a Nobel laureate in Chemistry, and Jennifer Doudna, a biochemist and one of the developers of the CRISPR gene-editing technology, are examples of women who have redefined the boundaries of what is possible in their fields.

However, the gender disparity in science is still a pressing issue. According to reports from various scientific organizations, women represent only about 30% of researchers worldwide. This is even more pronounced in fields such as engineering, physics, and computer science, where women make up less than 25% of the workforce.

Challenges Women Face in Science

Despite the growing presence of women in science, barriers to entry and advancement remain prevalent. Some of the key challenges women face in scientific fields include:

1. **Gender Bias and Stereotypes**

Women scientists often face gendered expectations about their roles and capabilities. These biases affect hiring decisions, promotions, and the allocation of resources and funding. For example, female scientists may be given more administrative or teaching roles rather than leading research teams. Additionally, the stereotype that men are more suited for technical and leadership positions remains an ongoing challenge.

2. **Work-Life Balance and Family Responsibilities**

Science is an intensive field, often requiring long hours in labs, fieldwork, or traveling for conferences. For women, especially those with children or caregiving responsibilities, balancing a career in science with family life can be particularly challenging. While more institutions are now offering flexible working hours or parental leave policies, structural barriers still exist that hinder women from achieving a work-life balance that supports their career growth.

3. **Lack of Mentorship and Networking Opportunities**
Mentorship is crucial in advancing any career, and this is especially true in science, where career development often relies on connections, collaborations, and guidance from senior scientists. Women in science frequently report having fewer female mentors, due to the low number of women in senior positions. Networking opportunities may also be limited for women, particularly in male-dominated fields, preventing them from building the professional relationships that could advance their careers.
4. **Imposter Syndrome**
Many women in science experience imposter syndrome, a phenomenon in which they feel like they don't belong or that their accomplishments are due to luck rather than merit. This psychological challenge can lead to self-doubt, reluctance to ask for promotions, or hesitation in pursuing leadership roles.
5. **Lack of Representation in Leadership Roles**
Despite the increasing number of women entering scientific fields, they remain underrepresented in leadership positions. This is particularly true in academic leadership and scientific boards, where men still occupy a disproportionate share of roles. This lack of female role models in leadership positions can perpetuate gender inequalities and limit opportunities for younger women in science.

Breaking Down the Barriers: How to Support Women in Science

To further encourage and empower women in science, several strategies need to be implemented to break down

barriers and create a more inclusive scientific community. Some of these strategies include:

1. **Encouraging Early Participation in STEM**
Encouraging girls to pursue STEM (Science, Technology, Engineering, and Mathematics) education from an early age is crucial. Programs like STEM outreach for young women, mentorship initiatives, and scholarships can inspire the next generation of female scientists and give them the confidence to pursue careers in male-dominated fields.
2. **Equal Pay for Equal Work**
Efforts to close the gender pay gap in science need to be stepped up. Female scientists should be compensated equally for the same work and given the same opportunities for funding and recognition as their male counterparts.
3. **Creating Inclusive Workplaces**
Workplaces should be inclusive and flexible to ensure women can succeed in both their professional and personal lives. This includes implementing policies for flexible hours, remote work, paid parental leave, and on-site childcare to help balance career demands with family responsibilities.
4. **Promoting Female Mentorship and Sponsorship**
Establishing mentorship networks for young women in science is crucial. Women at senior levels should be actively encouraged to mentor and sponsor younger female colleagues. This will help increase the representation of women in research leadership and academic positions.
5. **Addressing Imposter Syndrome**
Women need confidence-building programs and peer

support groups to overcome feelings of inadequacy and imposter syndrome. Encouraging open conversations about these challenges can help women feel more empowered to take leadership roles and pursue high-risk scientific endeavors.

Conclusion: Women Shaping the Future of Science

Women have been instrumental in the growth and development of science throughout history, and their influence is now stronger than ever. However, the fight for gender equality in science is far from over. Women still face significant challenges—from gender biases and pay gaps to underrepresentation in leadership roles. As we continue to break down these barriers, it is essential to create an environment where women feel empowered to thrive in scientific fields. By providing mentorship, equal opportunities, and an inclusive work environment, we can ensure that women are given the tools to succeed and contribute to the future of scientific innovation. Women in science are no longer just breaking barriers—they are shaping the future of technology, medicine, and research. Their contributions are vital to the progress of society, and as a community, we must continue to support their work at every step.