Nvolve has built an integrated multi-year pre-professional development model to support diversity in STEM.

Nvolve is a 501(c)(3) non-profit start-up dedicated to involving women in technology, engineering, health, and life sciences fields (www.NvolveMe.org). Our selective community of scholars and mentors empowers college women to overcome gender, race, and socioeconomic barriers to STEM fields and professional success.

We have built an integrated pre-professional career readiness model to support college women majoring in STEM fields. Our multi-year program is specifically designed for high-achieving, full-time female college students -primarily from underrepresented racial, ethnic, and socioeconomic backgrounds and focuses on 4 essential components of pre-professional development:

1. Professional Mentorship
2. Leadership Development
3. Collaborative Project Development and Individual Scholarship
4. Networking and Career Planning
1. Professional Mentorship

Upon admission into the program, scholars undergo a comprehensive mentor selection and pairing process, during which they are coached on how to establish goals for the mentoring relationship, determine criteria for selecting a mentor, and take ownership of their role in the mentor-mentee partnership.

Our mentor pool is entirely volunteer-based and comprised of 40+ women STEM professionals who are enthusiastic about sharing their expertise, eager to invest time and energy in the success of others and interested in furthering their own leadership skills mentoring.

What makes Nvolve different is the approach to mentoring. The word and term mentor can be used loosely and is often understood in many ways. Nvolve has created a professional mentoring process that is intentional and purposeful. Nvolve mentors have clearly defined objectives and expectations pertaining to their role. Accountability structures have been created so that both scholars and mentors are able to meet expectations in a timely manner.

This is what makes mentoring successful and has the desired impact on the scholars. There is a seriousness, and the process of mentoring is professional - there is training provided, consistent group and individual meetings are held so that mentors are investing in the process in a way that is meaningful. Scholars have clear expectations communicated to them just as mentors have. There are timelines for both mentors and scholars to achieve goals and complete tasks. Over 60% of our mentors hold post-graduate degrees in their field and have backgrounds in biological sciences, engineering, technical project management, cybersecurity, artificial intelligence, drug development, education, statistics, UX design, among others. Our mentors work at organizations such as AstraZeneca, the National Institutes of Health, UCB Biosciences, Deltek, NC Central University, Oak Ridge National Lab, Microsoft, GlaxoSmithKline, Department of Defense, Deloitte Consulting, STEM CELL Technologies, University of Southern California, and Contrast Security.
2. Pre-Professional Leadership Development
With the mentor pairing completed, scholars will begin their pre-professional skill-building journey which involves a deep dive into a specific topic each month (Topic of the Month). Examples of these topics include Goal Setting, Focusing on What is Important, Giving and Receiving Feedback, High-Performance Teams, Leading Projects, Personal Branding and Social Media Signature, Internship Fundamentals, and Influencing. We introduce, practice, and sharpen these skills, utilizing various experiential learning models including:

- Topic-specific reading/viewing material
- Exercise worksheets
- Interactive instructional sessions
- Scholar-led workshops
- Semi-structured mentoring sessions
- Scholar-led speaker series
- Scholar-selected and developed outputs to demonstrate competency in the topic

Nvolve offers the opportunity for scholars to sign up for a variety of group projects throughout the year. Examples include creating STEM podcasts, conducting survey research, visualizing data (using Tableau), and developing no-code apps. Nvolve’s projects are supported by one or more volunteer technical coaches. At project conclusion, team members are evaluated on several principles that are predictive of real-world success.

3. Collaborative Project Development and Individual Scholarship
Societal and technological change are driving us to re-think what it takes to succeed as a STEM professional. At Nvolve, we teach our scholars how to thrive in a rapidly changing world by training them on the process of turning and imaginative ideas into reality by identifying the steps and skills needed to create a valuable product, how to use what they create to project their vision and advance their academic or career goals. Our approach to group projects is to mirror the real world. Scholars take the initiative to gather information, set priorities, identify constraints, plan projects, select tools, identify risks, assess tradeoffs, build/iterate/build, and lastly seek and interpret feedback.
Examples of scholar projects include:

**Podcasts — NVOLVE (nvolveme.org)**
**Data Visualization — NVOLVE (nvolveme.org)**
**Breast Cancer Biomarker — NVOLVE (nvolveme.org)**
**COVID-19 Research — NVOLVE (nvolveme.org)**

**Clinical Study**

**Greater Awareness and Knowledge of Clinical Research Increases Willingness to Participate in Future Vaccine Trials: An Examination of the Enduring Impact of COVID-19 Pandemic**

Shiqiong Lu¹, Cinthia Flores², Carolina Rios Rocha³, Hodaio Yao Poudima⁴, Faye O’Brien⁵

¹University of Maryland, College Park, MD, US
²University of Maryland, Baltimore County, MD, US
³Nvolve Inc., Potomac, MD, US
WHAT ARE BIOMARKERS?

Biomarkers are genes, proteins, or other substances that help indicate the direction of treatment and information about the type of cancer a person has.

Some key biomarkers include:

- **PR**
  - Progesterone Receptors

- **ER**
  - Estrogen Receptors

- **HER2**
  - Human Epidermal Growth Factor Receptor 2

Testing for biomarkers in cancerous cells can aid in choosing the appropriate approach to treatment. Gene overexpression, controlled by some of these biomarkers, is strongly linked to cancer.

There has been 261,550 new cases of breast cancer in the U.S. in 2021

45,600 of these women have been predicted to die from breast cancer

20%-30% of breast cancer tumors have high levels of HER2 protein

WHAT IS HER2?

HER2, also known as Human Epidermal Growth Factor Receptor 2, is a gene that contributes to the growth of breast cells through producing HER2 proteins. These proteins act as connecting receptors on breast cells that aid in controlling the growth, repair, and division of breast cells.

**Detection:**
- Immunohistochemistry and Fluorescence in Situ Hybridization.

**Normal function:**
- In healthy functioning breast cells, the HER2 proteins are controlled, and breast cells grow at a normal basal pace.

**Classification:**
- **HER2** is both predictive and prognostic. HER2 is predictive because it helps determine the most effective treatment for patients. HER2 is also prognostic because it can be used to predict the disease outcome on the individual without treatment.

**HER2 in Breast Cancer**

When the HER2 gene is mutated, it replicates itself rapidly and the production of HER2 proteins becomes uncontrolled. The overexpression of HER2 proteins causes uncontrolled growth of breast cancer cells. The rapid amplification of HER2 genes in breast cancer cells is referred to as HER2 Positive Breast Cancer. HER2 Positive Breast Cancers tend to grow rapidly and spread easily.

BY: KHADIJA WALKER AND HOMA KESHMIRI

JOURNAL OF CLINICAL RESEARCH BEST PRACTICES
Vol. 16, No. 9, September 2020

"Happy Trials to You"

The Enduring Impact of COVID-19 on Current and Future Clinical Trials
By Faye S. O’Brien, David L. Waldrop, Ebonie I. Gadson, Henry Rice, and Norman M. Goldfarb
4. Networking and Career Planning

The resources, training opportunities, and networking events hosted by Nvolve help our scholars navigate transitioning to a STEM career after receiving their bachelor’s degrees. We support our scholars in identifying their dream career paths (academia, government, or private industry) through counseling and interest surveys, enabling them to evaluate multiple career fields and to identify a good fit. Through our extensive network of academic and professional volunteers, Nvolve provides guidance and resources that can improve internship and career search success.

In addition to providing customized one-on-one resume assistance and interview coaching, we also offer tips for conducting a modern job search, including LinkedIn profile, navigating online search services, and understanding applicant tracking systems.