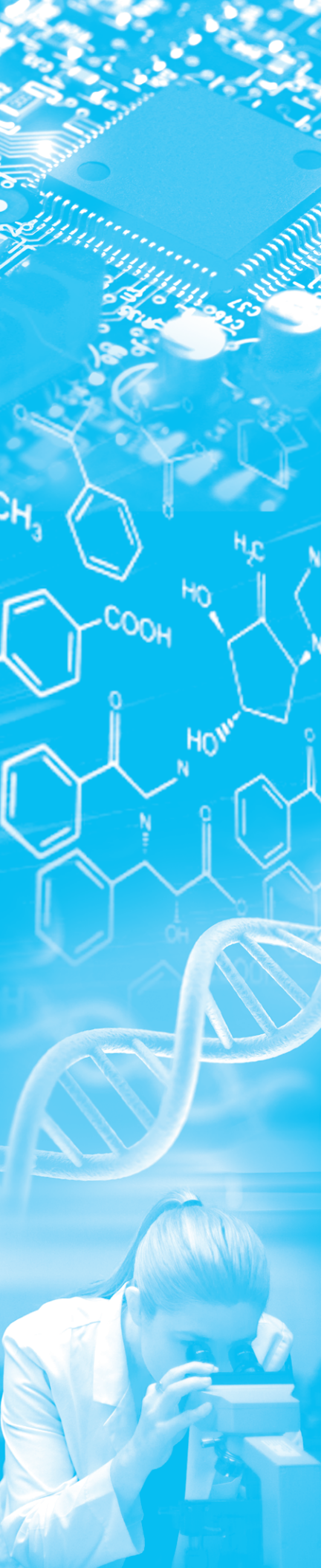

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# Pediatric Perimetry Equipment

Visual field (VF) test or perimetry test is a commonly used eye test that helps physicians determine any possible dysfunction in central and peripheral vision, which might be indicative of major medical conditions such as stroke, glaucoma, and other ophthalmology diseases. VF testing is especially required in children to increase definitive diagnosis of slowly progressing eye diseases. If these medical conditions go undiagnosed and untreated, they are more likely to result in greater loss of vision. The traditional perimetry test requires the participant to sit for a long duration of time and react while observing small flashes of light in the periphery of their visual field. Therefore, remaining focused and reacting to the light stimuli is essential for accurate evaluation. One of the major challenges of administering a VF test to children is their lack of attention over the entire length of the test. Consequently, the data obtained from children's perimetry test is often unreliable and inconsistent. To address this issue, Dr. Ava Bittner at NSU's College of Optometry has devised a modified VF evaluation equipment that makes the process of evaluation more engaging and stimulating for children.

## Technology

This novel technology developed by Dr. Bittner provides a non-invasive method of improving VF testing of children that will keep them engaged and produce more reliable and consistent data. The components include a microdisplay video screen that will display video clips of cartoon characters instead of the flash of light traditionally used for VF tests. This system will also offer audio clips of voices of cartoon characters, which will provide instructions and feedback based on the child's performance on the test. These modifications have shown to produce increased engagement and improved attention span in children, which resulted in more dependable test results.

## Application

Currently there are a number of perimetry equipment being used for evaluating visual field but none of them are tailored for perimetry testing in children. This novel system facilitates visual field testing for pediatric subjects, which will yield consistent and reliable VF evaluation results. Total market size of VF diagnostic market was about US$ 264 million in 2017 and it is predicted to grow at a compound annual rate of 2.3 percent over the next five years to reach a total size of about US$ 295 million by 2022. Hence, this technology offers an attractive commercial opportunity.

## Advantages/Benefits

- This new method will keep children engaged and more involved throughout the entire visual field evaluation process, thus resulting in improved outcome.
- This novel system can be incorporated into existing perimetry devices without significant modification of the equipment
- Instructional feedback and guidance provided to children in the form of cartoon character voices will ensure they follow the right procedure and do not get distracted. This will enable the evaluator achieve more reliable and consistent results.

## Status of Development

Dr. Bittner and her research colleagues have created a prototype of this visual field evaluation system and conducted initial clinical studies on 5 to 9 years old children. Initial findings indicate significant improvement in engagement and attention span of children during the VF tests. More studies involving larger number of children across multiple sites are being planned and currently enrollment is ongoing for clinical studies.

## Patent Status

US Provisional Patent filed on 1 March 2016.

## Information on Inventor

Dr. Ava Bittner is an Associate Professor at NSU's College of Optometry. She earned her Optometry degree from the Pennsylvania College of Optometry. In 2011, she received a PhD in clinical investigation from the Johns Hopkins School of Public Health. Dr. Bittner completed a clinical research post-doctoral fellowship at the Johns Hopkins Wilmer Eye Institute's Lions Low Vision Research and Rehabilitation Center from 2002-2007, and then joined the faculty as an Assistant Professor at the Wilmer Eye Institute. She Joined NSU in 2014.

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