

### Can Electronic Hand Held Pipetting Cross the Chasm? What Does History Tell Us?

Gary Nelson, Integra Biosciences

If you are using a pipette today and you are asked one or more of these questions about electronic pipettes: Do you have Electronic Pipette in your lab? Do you own an electronic pipette? Do you use an electronic pipette? **What do you think the majority of scientists would answer? Probably "No, because I tried it years ago and found it to be...Too expensive, Too hard to use, Too fancy, Too big!"**

Any of these answers would have worked 25 years ago or maybe even 10 years ago the answers would have been understandable... but it's hard to imagine today, right?

To start, many people in the scientific community today were not even around when electronic pipettes with functionality similar to what we know today were introduced to scientific laboratories. In truth it started around 1986 when Matrix Technologies in Lowell, MA and Rainin Instruments in Northern California invented a microprocessor controlled pipette. Matrix, a start-up and Rainin, a well-established leader in manual pipetting, both spoke of the virtues offered when a piston is driven by a motor and not the human thumb. Repetitive motion injuries could be nearly eliminated; accuracy and precision would be improved because each plunger movement was reproducible. Both again warned the

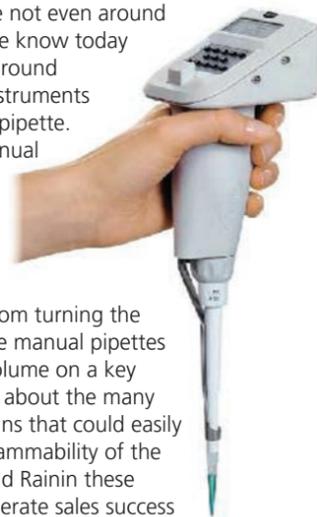
scientist of the RSI that resulted from turning the dials to adjust the volume of the manual pipettes and not directly entering the volume on a key pad; and, finally, both went on about the many application and productivity gains that could easily be accomplished with the programmability of the pipette. Fortunately for Matrix and Rainin these were true benefits, but only moderate sales success was accomplished because the issues of 'too big', 'too expensive', and 'too hard to use' were also true.

Technology needed to catch up with innovation. While the two Pioneering companies, Matrix and Rainin, were investing heavily in R+D to improve their first generation products, a third company, Biohit, in Helsinki, Finland introduced a competitive product in 1990 that overcame at least the size objection...it was smaller than the Matrix or Rainin offerings. Even with ergonomists singing their praises and the three companies continuing to improve their products, the early adopters were still the only market for electronic pipettes.

The next eight to ten years of market growth was dominated by the early adopters. Although OEM agreements had been reached by Biohit with Eppendorf and innovations in productivity had been accomplished by Biohit and Matrix with larger volume pipette; Matrix's expanding tip pipette for reformatting and sampling more than one channel at a time; and Rainin's introduction of a simpler, less featured model to shorten the users learning curve, problems existed with reliability, size and ease of use.

Then in 1999 three events happened that may have moved the market into the next segment of market acceptance. First, Eppendorf, after sitting on the sidelines for over a decade without a proprietary offering, finally introduced their Research Pro line, which took a nice step toward improving the comfort and ease of use for the scientist. Next, that same year, the first acquisition of an electronic pipette Company was completed when Matrix Technologies was acquired by Sybron Laboratory Products. Finally, another new company, Vista Labs in Brewster, NY introduced their ergonomically friendly Ovation pipettes. In retrospect that flurry of industry action in 1999 was the first real move to cross the product life cycle chasm and gain majority acceptance. Additional signs of crossing showed up in the next 7 years when two new companies got involved and for the first time Asia joined The United States and Europe with product alternatives.

Existing companies continued to expand and improved their offerings through the early years of the new millennium, but it wasn't until 2006 that electronic pipette manufacturers really believed they answered the balance of those nagging questions from the 80's by dividing the crossing into two mainstream users - those that needed a simple minimum function motor driven pipette and those that wanted to get it all, standardised SOP's, RSI relief, and productivity.



The first to respond to the question, 'Is "bigger and more functions" really better?' was Matrix (now Thermo Fisher) when they introduced their voice controlled Hybrid pipette with less functionality. Then, Gilson's produced the 'Pipetman M' and more recently Sartorius (formerly BioHit) introduced their 'Picus' pipette with a more simplified approach.

Circa 2007, the 3rd or 4th (I'm not really sure) generation pipettes from the 1980's concept began to enter the market and technology finally catches up with innovation when the electronic pipette world met the consumer electronics world. The first of this new generation pipette was introduced by Viaflo Corporation (founded in 2005 and now Integra-Biosciences). The Viaflo pipettes featured the first four color display without instructional limitations and a touch wheel similar to what is used in the music industry to access user preferences. Bluetooth connectivity could also be added for growing lab management needs. The full line of Integra pipettes included the standard single and multichannel pipette. The 'Voyager' pipette, with the first motor driven variable spaced tip for productivity gains in sample addition and gel loading, opened the doors for today's fully functional consumer initiated user interfaces by Thermo Fisher's 'Novus', Eppendorf's 'Xplorer', and finally Mettler Toledo's 'E4 XLS'.



Novus



Xplorer



E4 XLS



In an effort to take electronic handheld pipettes completely across the chasm from innovative early adopters to main stream pipetting, Integra Bioscience has recently introduced the most productive handheld pipette to date when in January of 2013 they introduced 'Viaflo 96/384'. Will this latest generation of pipettes be what it takes to fully address the issues of the 80's or is there still something new needed?

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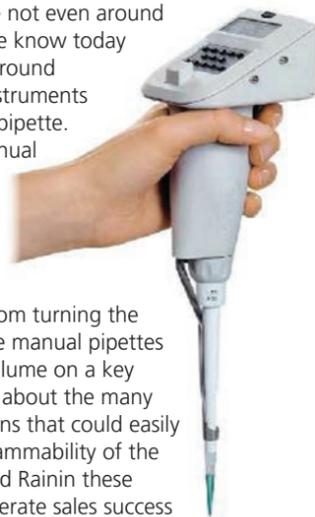
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