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History of Microplates

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History of Microplates

By Roy Manns

Microplates are also referred to as Multiwell plates and Microtiter[®] plates, the latter being a registered trademark of the first company that commercialized the use of Microplates. The earliest Microplates were handmade and date back to 1954/55 in Hungary, where the need arose because of a severe Influenza outbreak. Dr. Gyola Takatsy needed to speed up the diagnostic testing of patients and the common test tube was too cumbersome and slow. These earliest Microplates were machined one at a time, with 100 wells (micro test tubes) in 10/10 rows.

The National Institute of Health in Maryland, USA was the research base from where the late Dr. John Sever designed the first 96 well plates. John Liner, Linbr Cooke and Nelson Cooke (Cooke Engineering) went to the market at about the same time in 1962/63.

Almost all Microplates are made from various plastics and polymers, while some of the new innovative plates incorporate optical grade glass, fiberglass matting, a range of filter membranes and specialty papers.

Microplate History

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A Microplate or Multiwell is a flat plate/tray/panel/dish with multiple test tubes. This is perhaps the best way to describe this versatile format that is now a standard in analytical research and clinical diagnostic testing. The number of "test tubes", more commonly known as "wells" have gone beyond 1536 to 3456 and even 9600 which brings the Microplate into Nano range and Pico range is not far behind. While the origins go back to 1951/2 in Hungary where Dr. Takatsy machined 6 rows of 12 in a Lucite (acrylic), common usage in the laboratory started in the late 50's and started to gain momentum during the late '50's when John Liner in USA had introduced a molded version. By 1990, microplates were available with filter bottoms and overall there were more than 15 companies producing a wide range of microplates. The current estimate of the total market for microplates in 2000 is approximately 125 Million.

An overview of the significant events in the history of the development of microplates is shown below:

Year	Innovator	Affiliation	Contribution
1951	Dr. G. Takatsy	N.I.P.H. Hungary	72/100 well machined acrylic plate
1952	Dr. G. Takatsy	N.P.H. Hungary	First 96 well V bottom machined plate
1953	Mr. John Liner	Linbro Company	First vacuum formed 96 well microplate
1963 / 64	Drs. Sever & Cooke	N.I.H. Labs USA	First molded 96 well microplate
1965	Cooke	Cooke Labs USA	Company set up to make 96 well plates in acrylic and later in polystyrene
1966	Dr. Knebel	Griener Labs	First production of 96 well plates in Europe



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1968	Cooke	Cooke Labs USA	Patent issued for microplate Microtiter and Trade Mark registered
1968 / 69	Not known	Falcon (now BD)	6 well PVC thermoformed plate
1968 / 69	N.A.	Dynatech Labs	Dynatech Corp acquires Cooke Labs USA
1969 / 70	Dr. Morningstar	Data Packaging Corp.	Custom molder for Microtiter® plates
1970	N.A.	Dynatech Labs / Data Packaging Corp.	Form joint venture known as CoStar
1971	Cooke	N.A.	Lawsuit against John Liner – microplate patent invalidated
1972	N.A.	Dynatech Labs / Data Packaging Corp.	Joint venture dissolved
1972	Dr. P. Cleveland	Univeristy of Minnesota	First microplate / filter manifold
1974	Allister Voller & Dr. Ken Walls	London and CDC	Start using microplates for ELISA
1975	Greg Mathus & team	CoStar division of DPC	Plate format redesigned
1975	In house team	Griener Labs	8 well strips flat and U bottom
1976	Not known	Falcon (now DB)	Starts moulded 96 well plate
1976 / 80	N.A.	Corning, Nunc	Enter 96 well plate market
1979	A. Thorne	Dynatech (Dynex)	First individual 'removawell'
1980	Dr. P. Cleveland	V & P Scientific	First microplate with GF discs
1980	Dr. P. Cleveland	V & P Scientific / Schleicher & Schull	First 96 well dDot-blot manifold
1981	Kivosky et al	Millipore	Machined 96 well plate with filter
1981	Dr. Cleveland	UCLA at San Diego	First 96 well filter plate patent
1982	A. Thorne	Dynatech (Dynex)	First pigmented (black & white) plates
1983	A. Thorne	Dynatech (Dynex)	Patent issued for above in Europe
1983	Dr. M. Jolly	Pandex (now Iddex)	First black 96 well filter bottom plate
1984	Roy Manns	Meipec	Designs first "no cross-talk" filter plate
1984	Roy Manns et al	Genemed Engineering	First patent for two piece filter plate
1985	Roy Manns et al	Genemed Engineering	Produces nitrocellulose filter plate
1985	Dr. P. Cleveland	V & P Scientific	First 12 well filter strip in 96 well plate
1986	Roy Manns	Genemed Engineering	Takes over development of plates
1987	Intenal R & D team	Dynatech Labs	8 and 12 well strips in 96 well format

1987	Manns, Saunders et al	Polyfiltronics Ltd.	Newco in the UK for filter microplates
1987 / 88	Dr. V. Matkovich	Pall Corp.	Develops 3 layer / 96 well plate
1988	Internal R & D team	CoStar	8 well filter strip introduced
1988	Barry Bochner	Biolog	First postage size microplate
1990	Roy Manns et al	Polyfiltronics / Packard	First 96 well clear bottom 96 well plate
1990	Tom Astle	Tomtech / Pfizer	24 well plate with Porex Frits
1991	Unknown	Helix	First 864 well plate
1991	Richard Goodwin	Neuroprobe	First 96 well chemotaxis chamber
1991	Roy Manns	Polyfiltronics	First glass fibre microplate
1992	Dr. G. Lennon et al	Lawrence Livermore	First 384 well developed
1992	Dr. Bochner et al	Biolog / Polyfiltronics	First 48 well plate (35 mm slide format)
1992	In house team	Genetix	First commercial 384 well plate
1992	Roy Manns et al	Packard Instruments	Unifilter 96 and 24 for scintillation
1992	Richard Goodwin	Nueroprobe	Chemotaxis chamber with viewplate
1992	Roy Manns et al	Pakard Instruments	Viewplate 96 for luminesence
1993	In house team	Millipore	96 well multi-screen PVDF
1994	Richard Goodwin	Nueroprobe	ChemoTX system with first low 25ul well plate and filter frame
1995	Roy Manns / Dr. Seed	Polyfiltronics / AGTC	First deep well filter for DNA
1994	Roy Manns et al	Polyfiltronics	First moulded PCR plate
1995	Manns / Margolin et al	Polyfiltronics	First moulded 384 PCR plate
1996	Manns / Young et al	Whatman	First 1,536 well plate
1995 / 96	Manns et al	Polyfiltronics / MDC	First UV 96 well spectraplate
1996	Manns et al	Whatman / Aurora	First 3,456 well nanoplate
1997	Dr. Knebel	Greiner Labs	First injection moulded 1,536 well plate
1997	Richard Goodwin	Nueroprobe	300ul version of ChemoTX system
1997	Manns et al	Evotec / Whatman	First 96 well glass bottom microplate
1997	Dr. K. Oldenburg et al	Du Pont	First 9,600 well plate
1997	Dr. Knebel	Greiner Labs	First square well 1,536 well plate
1997	In house team	Genetix Ltd	First round well 1,536 well plate
1997	Lipsky, Manns	Whatman	First 2mm glass/PP – combichem

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1997	Dr. Knebel	Greiner Labs	First clear bottom 1,536 well plate
1997	Dr. Knebel	Greiner Labs	First small volume (20ul) 96 well plate
1998	Polyteam	Whatman Group	First deepwell (400ul) 384 well plate
1998	Dr. Knebel	Greiner labs	UV transparent 384 well plate
1998	Dr. Smith et al	Whatman	Bioplates loaded with resins
1998	In house team	Affymax / Whatman	First 864 square well plate
1998	In house team	Affymax / Packard/ Whatman	First 864 well viewplate
1999	In house team	CoStar	96 well filter plate
1999	In house team	Millipore	Single piece 96 well filter plate
1999	In house team	Whatman / Polyftronics	First 48 well 5 ml rectangular plate

ABOUT US

The Plastics Historical Society was formed in 1986 and was first to draw attention to the heritage of the plastics industry and to celebrate all things plastic. Our aim is to encourage the study of all historical aspects of plastics and other polymers, including synthetic fibres, rubber and elastomers.

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