

Special Feature

A short history of ‘glomerulus’

Gianni Bellomo

Department of Nephrology, Assisi Hospital, Regione Umbria, Italy

Correspondence and offprint requests to: Gianni Bellomo; E-mail: assidal@tin.it; bellomopg@yahoo.it

Keywords: busch; glomerulus; glomus; history; Malpighi

After enjoying Kettritz’s and Luft’s Nephroquiz [1], I enjoyed even more their reply [2] to my comment, which they ended by posing an interesting dilemma: should we use the terms ‘glomerulus/glomeruli’, masculine gender, or ‘glomerulum/glomerula’, neutral gender? Though I am not a learned scholar (only relying on my four-year high school Latin, long forgotten), I have done some homework and delved a little into the history of the word as well as of the nomenclature of the renal structure we now call ‘glomerulus’.

In the fourth century, the Byzantine physician Oribasius (Pergamon 325–Constantinople 403), chief doctor to the staff of the emperor Julianus the Apostate, described in his *Snopsis* the circulation of the kidney [3] as composed of “τα σωματα των νεφρων” (ancient Greek for renal bodies) and defined the anastomosis of the renal artery with the vein through the capillaries, using for the first time the term ‘τριχοειδής’ (capillary, hair-like). The first microscopical description of the ‘glomeruli’ dates back to the work of the Italian anatomist Marcello Malpighi (1628–1694, [Figure 1](#) [4]), who in ‘De renibus’ a section of ‘De Viscerum Structura Exercitatio Anatomica’ [5], published originally in Bologna, Italy in 1666, and in London in 1669, gave an accurate description of their structure; he did not denominate them ‘glomeruli’, though, defining them as dark vascular structures resembling fruits suspended on a branch (... quae sanguineis vasis atro liquore turgidis in speciolae arbori formam productis, velut poma appenduntur) or ‘glandulae’. The term ‘glomerulus’ actually belongs, rather than to ancient, to modern Latin, with its first recorded use, according to the Merriam’s Webster and the Oxford dictionaries [6, 7], dating back to the mid-nineteenth century. It appears to be derived from the ancient Latin word ‘glomus’ (plural glomera), third declension, neutral gender, which means ‘a clew, ball made by winding’ [8].

The term ‘Glomus’ transgendered into masculine in the seminal dissertation ‘de Structura renum’ (1782, [Figure 2](#)) [9], written by Alexander Schumlanski (1758–1795) for his doctoral thesis at the Universitas Argentoratense (Strasbourg, France). Schumlanski deduced by experimenting on pig kidneys, a connection between the circulation and

the uriniferous tubules, many years before Bowman proved his theory to be correct. Schumlanski in his dissertation in Latin (the international language of science at those times) used the terms ‘glomeres’ and ‘glomeres glandulosos’, masculine gender. A few decades later, in 1851, Friedrich Theodor von Frerichs published his work on Bright’s disease [10], in which he alluded to ‘glomerulus’ as ‘kapsel’ or ‘Capsula Malpighii’. Almost at the same time, William Bowman (together with Robert Bentley Todd) [11] established a definite connection between the glomerular circulation and the urinary

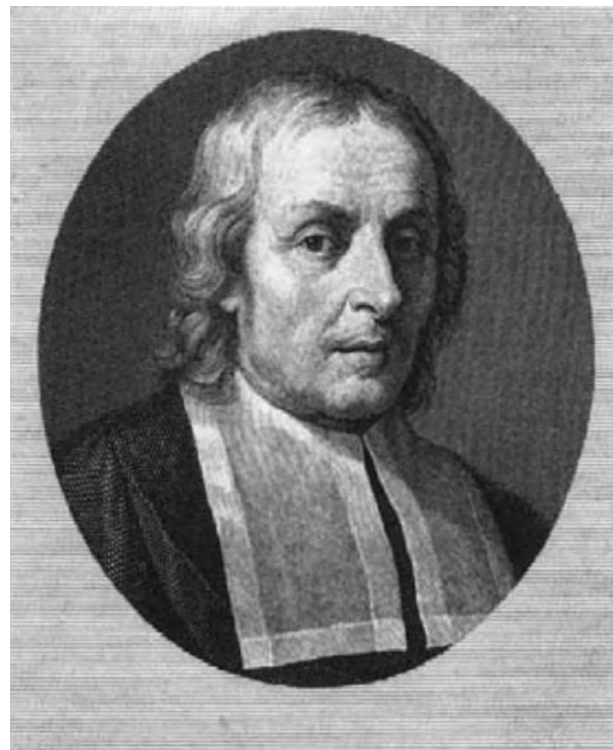


Fig. 1. Portrait of Marcello Malpighi [4].

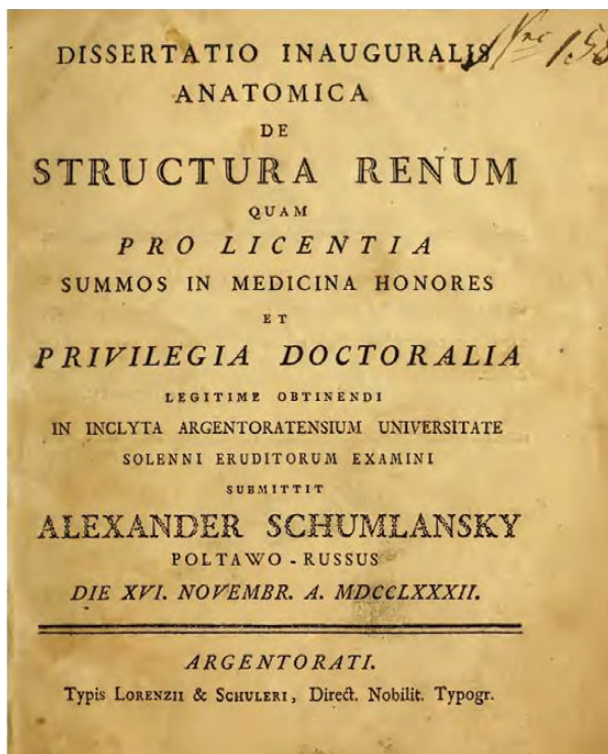


Fig. 2. Cover of Alexander Schumlansky's dissertation [9].

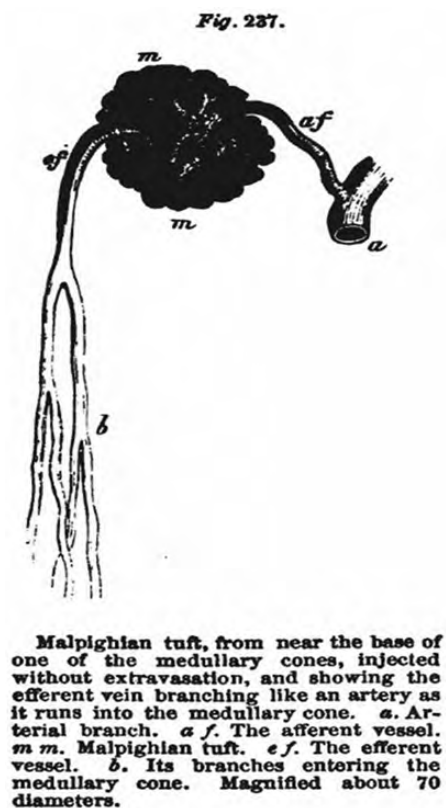


Fig. 3. Drawing of a glomerulus [10].

tubules (Figure 3). Again, he did not define 'glomeruli' as such, but called them 'Malpighian bodies' or 'Malpighian Corpuscles'. The American anatomist Charles Edward Isaacs (1811–1860) also gave an accurate description of the glomeruli [12], defining them as 'Malpighian coils' or 'Malpighian tufts'. The first recorded usage of the word 'glomerulus' dates back to the work of the German anatomist and surgeon, Wilhelm Busch (1826–1881), who published his research on the excretory apparatus of snakes in 1855 [13], quoted by Isaacs (Dass der glomerulus wirklich, in einer kapsel...).

Finally, reverting to the original semantic dilemma (glomerulus/glomeruli versus glomerulum/glomerula), though of course both are correct, I tend to favour slightly, as the ancient Latin progenitor is neutral gender, the neutral binomium 'glomerulum/glomerula'.

This short historical note does not have the ambition of being either exhaustive or comprehensive, and more learned contributions are welcome.

Acknowledgements. I wish to thank Professor Eberhard Ritz for his useful hints and suggestions; I would like to extend a general thanks to Google Books, which by digitalizing many ancient textbooks allowed me to perform my search within a reasonable time interval.

Conflict of interest statement. None declared.

References

1. Kettritz R, Luft F. A case of strange cardiac rhythms. *Clin Kidney J* 2012; 5: 603–604
2. Kettritz R, Luft F. Reply. *Clin Kidney J* 2013; 6: 123.
3. Eftychiadis AC. Renal and glomerular circulation according to Orbasius (4th century). *Am J Nephrol* 2002; 22: 136–138
4. Fogazzi GB. The description of the renal glomeruli by Marcello Malpighi. *Nephrol Dial Transplant* 1997; 12: 2191–2192
5. Malpighi M. *De Viscerum Structura Exercitatio Anatomica*. Londini: Typis T.R. Impensis Jo. Martyn. (London) MDCLXIX (1669): 83–84, http://books.google.it/books?id=Wq4UAAAQAAJ&printsec=frontcover&hl=it&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false (5 March 2013, date last accessed)
6. Merriam Webster dictionary. Glomerulus. Available at <http://www.merriam-webster.com/dictionary/glomerulus> (5 March 2013, date last accessed)
7. Oxford Dictionaries Online. Glomerulus. Available at <http://oxforddictionaries.com/definition/glomerulus> (5 March 2013, date last accessed)
8. Crane GR. Perseus Digital Library. Available at <http://www.perseus.tufts.edu> (5 March 2013, date last accessed)
9. Schumlansky A. *Dissertatio inauguralis anatomica De Structura Renum*. Argentorati (Strasbourg): Typis Lorenzii & Schuleri, 1782 MDCLXXXII
10. Von Frerichs FT. *Die Brightsche Nierenkrankheit und deren Behandlung* [Bright's Kidney Disease and Treatment]. Braunschweig: F. Vieweg und Sohn, 1851, p. 13
11. Todd Bentley R, Bowman W. *The physiological anatomy and physiology of man*, Vol. 2. West Strand, London: John W Parker and sons, 1859, pp. 482–507
12. Isaacs CE. *Researches into the structure and physiology of the kidney*. Trans New York Acad Med, New York: Baillières Brothers, 1857, pp. 377–435
13. Busch W. *Beitrag zur Histologie der Nieren*. Müller Archive für Anatomie, Physiologie und wissenschaftliche Medizin, 1855, pp. 363–375

Received for publication: 13.2.13; Accepted in revised form: 18.2.13