

Current classifications of oribatid mites (Oribatida) - a mite group meanwhile comprising about 10.000 described species - are artificial and mainly represent keys for identification without a phylogenetic claim. One character of special phylogenetic importance, however, is represented by the so-called "oil glands" (syn. opisthonotal glands): their presence divides the Oribatida into near-basal Palaeosomata and Enarthronota (in which oil glands are absent) and a vast monophyletic group of oil gland-possessing (glandulate) Oribatida (which also includes the Astigmata!). Even though the presence of oil glands (within glandulate groups) is devalued to a symplesiomorphic character, investigations into the oil gland chemistry have opened up the next level of oil gland-subcharacters. In fact, oil gland secretion profiles are species-specifically composed, stable and thus being well suited for phylogenetic analyses within glandulate Oribatida.

So far, oil gland chemistry reflects oribatid phylogeny as follows: hydrocarbons seem to represent the basic (plesiomorphic) equipment of oil gland secretions; they have been found in all oil gland secretions hitherto investigated, from basal glandulate groups (such as Parhyposomata) up to Astigmata. By contrast, a set of terpenes and aromatics seems to have evolved stepwise in Mixonomata and is expected to characterise all groups above as a monophyletic unit.

Based on these preliminary (but promising) results, a chemosystematic study on a broad basis will be conducted: Therefore, a comprehensive chemical "screening" of oil gland secretions of Austrian oribatids, comprising representatives of 30 superfamilies (i.e. covering the whole field of Oribatida), is planned. The resulting chemical data bank is considered a novel pool of phylogenetically useful data: an independent data set besides morphology and molecular biology.

Especially questions, having remained open and unanswered by morphology-based analyses (i.e. monophyletic groups within Oribatida, relationships among oribatid groups, paraphyly of "Mixonomata" and "Desmonomata", evolutionary origin of Astigmata and Brachypylida) are aimed to be answered on the ground of these novel chemical characters.