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Homo loompis: are Oompa-Loompas a distinct hominin species?

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Abstract

Oompa-Loompas work in Willy Wonka's chocolate factory, where they also live, having been brought there from their previous home on the island of Loompa. Here we explore whether they can be considered a distinct hominin species. Their inclusion into the hominin clade is first established through traits and characteristics because molecular evidence is unavailable. Using the limited evidence (largely visual observations) their species status is then validated under both the phenetic and biological species concepts.

Keywords: Film; Book; Genetics; Evolution; Hominins; Charlie and the Chocolate Factory; Oompa-Loompa

Introduction

Oompa-Loompas are known as the diminutive factory workers in Willy Wonka's chocolate factory both in Roald Dahl's famous book (Charlie and the Chocolate Factory [1]) and the two film adaptations (Willy Wonka & the Chocolate Factory, 1971 [2]; Charlie and the Chocolate Factory, 2005 [3]). This paper uses information from all three sources, with the book used preferentially where there are contradictions between material.

The existence of Oompa-Loompas has been the subject of criticism with original illustrations depicting 'African pygmies' before Dahl redesigned them as white with blond hair, and also the idea that Wonka 'rescued' the Oompa-Loompas and then let them work in his factory only to be compensated with cocoa beans rather than money [4]. These concerns and implications are not the focus of this paper, but rather a genetic characterisation of the Oompa-Loompa population.

It is never specifically addressed in any source material whether the Oompa-Loompas are an isolated group of humans or a separate species. This paper explores the evidence for Oompa-Loompas as a distinct hominin species, closely related to anatomically modern humans (*Homo sapiens*). Initially looking at whether Oompa-Loompas can be considered as hominins, a species more closely related to humans than to chimpanzees i.e., what

makes them like us [5]. The second portion will focus on what justifies a species distinction between Oompa-Loompas and modern humans.

Hominin characteristics

Although the following are all self-evident characteristics, they form the most fundamental features of hominins and without stating them the overall closeness of Oompa-Loompas to humans can be diluted.

Bipedalism i.e., upright walking is considered to be basal in hominids (a wider clade which encompasses hominins) [5]. It is evident from both the book and the films that Oompa-Loompas walk on two legs and are therefore bipeds.

In most species limbs are repeated structures governed by a high proportion of shared genes – this means they should evolve in parallel [6]. In humans, this is not the case, as can be seen in our different arm and leg lengths. This is typical of all hominins and is thought to be a result of an adaptation in our last common ancestor (LCA) [6]. Visual observations once again confirm that this is also typical of Oompa-Loompas.

Many species are capable of *communication*; social insects such as ants are renowned for their 'foraging communication' which utilises secretory glands and whales are well known for their song, often individual

to specific populations like the distribution of languages in humans [7, 8]. However, humans are the only extant species with *language* capabilities. It is not known where in the hominin evolutionary history that language emerged, and arguments persist over whether humans are the only ones *ever* with this faculty [9]. We know from both the films and the book that Oompa-Loompas do have language (Oompa-Loompish) and that humans can become fluent (we see Wonka speaking to them when he asks them to live in his factory) i.e., humans and Oompa-Loompas share the physical characteristics necessary e.g., of the larynx required to make the sounds that make up the language. This is a significant piece of evidence, not only suggesting that Oompa-Loompas could be hominins (in the way that bipedalism did) but making it extremely unlikely they *aren't*.

Speciation

What defines a species is one of the most basal questions of biology, it's also one of the most contested [10]. Here there is a limitation on which species concepts can be applied by the evidence available to us. Without any molecular data a phylogenetic species concept, one based on evolutionary relatedness, is not applicable. Instead, this paper uses a phenetic species concept – that species are natural populations which are separated by morphological discontinuity. Potential speciation under the biological species concept (based on reproductive isolation) is also explored [10].

There is a big difference in stature between Oompa-Loompas and humans – in both the books and the 2005 film adaptation [3] Oompa-Loompas are only knee-height. This constitutes two distinct morphological biotypes and as such Oompa-Loompas can be considered their own hominin species under

the phenetic species concept, perhaps *Homo loompis*.

It is important to understand that speciation, like evolution, is a *process* and not an event, and that species are a human concept [11]. This means that the boundaries between closely related species can be 'blurry'. It is possible that a founder population to the island of Loompa occurred and the geographic isolation and lack of gene flow began the process of peripatric speciation but that under some definitions Oompa-Loompas may not be a distinct hominin species. However, there are extreme differences in height (shared across the entire population), as described earlier. This poses a pre-zygotic barrier to reproduction and suggests that even if peripatric speciation did not fully occur, and humans and Oompa-Loompas are no longer geographically isolated from each other, sympatric isolation would instead occur as a result of this reproductive isolation. Oompa-Loompas could therefore also be recognised as a species under the biological species concept.

Conclusion

Several characteristics, namely bipedalism, non-parallel evolution of limbs and language capability, place Oompa-Loompas into the hominin clade. A lack of molecular evidence prevents the use of genome comparison to determine the phylogenetic relatedness of Oompa-Loompas with humans. However, the distinct stature differences mean that a species distinction can be made under the phenetic and arguably also the biological species concept. A binomial classification of *Homo loompis* is therefore suggested as appropriate scientific nomenclature for Oompa-Loompas.

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