Preamble
Geologically India is divisible into three units (1) Peninsular, (2) Extra-Peninsular and (3) Indo-Gangetic Plain. The Tertiary floras of India can conveniently be divided into two groups - Paleogene and Neogene. The Paleogene floras are found only in the Peninsular India, while Neogene occur in both the Peninsular and extra-Peninsular regions. They are predominantly tropical floras, made up of genera now largely confined to the Old World. A notable feature of the Indian Paleogene is the occurrence of a few southern hemisphere taxa which may recall the pre-Cenozoic relationships between India and the Gondwana continents to the south.

The **Cenozoic** (sen-oh-ZOH-ik; sometimes the British English *Caenozoic*) meaning "new life" (Greek *kainos* = new + *zoe* = life) is the most recent of the three classic geological eras of the geologic time scale. It covers the 65.5 million years since the Cretaceous-Tertiary extinction event at the end of the Cretaceous that marked the demise of the last dinosaurs and the end of the Mesozoic era. The Cenozoic era is ongoing.

The Cenozoic is divided into two periods, the Paleogene and Neogene, and they in turn divided into epochs. The Paleogene consists of the Paleocene, Eocene, and Oligocene epochs, and the Neogene consists of the Miocene, Pliocene, Pleistocene, and Holocene epochs, the last of which is ongoing.

Historically, the Cenozoic has been divided into periods (or sub-eras) named the Tertiary (Paleocene to Pliocene) and Quaternary (Pleistocene and Holocene), as well as the Neogene and Paleogene periods. However, the International Commission on Stratigraphy has decided to stop endorsing the terms Quaternary and Tertiary as part of the formal nomenclature.

The Early Tertiary or Paleogene spans just over 40 millions years of earth history from the Cretaceous / Tertiary boundary at 66.5 million years before present (mybp) The Early Tertiary is subdivided into Three epochs: The Paleocene, 66.5-54 mybp; The Eocene, 54-36 mybp; and The Oligocene, 36-25.2 mybp.

The Early Tertiary or Paleogene spans a period from 66.5 to 25.2 million years ago (Haq et al., 1987).
The **Paleogene** (alternatively **Paleogene**) Period is a major division of the geologic time scale and the first of two Periods that mark the current Era, the **Cenozoic**. The Paleogene began at the end of the Cretaceous period i.e. 65.5 ± 0.3 million years ago (mya) and ended 23.03 ± 0.05 mya. The Paleogene begins at the end of the Cretaceous period and is followed by the **Neogene** period, the current and final period of the Cenozoic. The Paleogene encompasses the **Paleocene**, **Eocene**, and **Oligocene** epochs.

<table>
<thead>
<tr>
<th>Tertiary sub-era</th>
<th>Paleocene epoch</th>
<th>Eocene epoch</th>
<th>Oligocene epoch</th>
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<tr>
<td></td>
<td>Danian</td>
<td>Ypresian</td>
<td>Lutetian</td>
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<td></td>
<td>Thanetian</td>
<td>Bartonian</td>
<td>Priabonian</td>
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<td>Rupelian</td>
<td>Chattian</td>
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**Cenozoic era**

**Neogene** **Quaternary**

### Chart: Division of Cenozoic Era

The **Paleocene** is a geologic epoch that lasted from 65.5 ± 0.3 million years ago (mya) to 55.8 ± 0.2 mya. It is the first epoch of the **Paleogene** period in the modern **Cenozoic** era, and is followed by the **Eocene**. As with most other older periods of the geologic time scale, the strata that define the Paleocene epoch’s beginning and end are well identified, but the exact dates are uncertain.

The Paleocene was "bookended" by dramatic events: A mass extinction (the **Cretaceous-Tertiary extinction event**) and a rapid global warming (the **Paleocene-Eocene Thermal Maximum**). The die-off of the **dinosaurs** in the prior mass extinction left unfilled ecological niches worldwide. The Paleocene provided the foundation for new fauna and flora throughout the world.

The **Eocene** epoch (56-34 million years ago). The start of the Eocene is marked by the emergence of the first modern flora. Within a geologically brief period of time in the early Eocene. Studies of fossils of early Eocene flora and those of the Eocene-Oligocene showed that species tend to remain stable (in stasis) for millions of years, with speciation occurring over relatively short periods of time. Such findings accord well with the theory of punctuated equilibrium, as well as with expectations from theistic views of creation.
As with other geologic periods, the strata that define the start and end of the epoch are well identified, though their exact dates are slightly uncertain.

The start of the Oligocene is marked by an extinction event that may be related to the impact of large extraterrestrial object in Siberia and/or near Chesapeake Bay.

The name Oligocene comes from the Greek oligos (few) and ceno (new) and refers to the sparsity of additional modern flora after a burst of evolution during the Eocene. The Oligocene is often considered an important time of transition, a link between "the archaic world of the tropical Eocene and the more modern-looking ecosystems of the Miocene" (Haines 1999). The Oligocene is one stage in the step-by-step development of modern life. It is also the source for a major oil reserve throughout the world.

In Paleogene, the vegetation and floras began to take shape and it was the time of major modernization and radiation of angiosperms and extensive changes in terrestrial vertebrate faunas, as was amply demonstrated by megafossil paleobotanists, such as Axelord (1958) & others, before paleopalynology played a major role in paleobotany.

The Cretaceous / Tertiary boundary is marked by major extinctions in the marine realm, final extinction of the Dinosaurs and ecological disruption of land habits (Officer et al., 1987; Wolfe and Upchurch, 1987).

A diversity of new microhabits and new competitive pressures typified this time. The modern world characterizes by radiation of flora and fauna represent the early stages of evolution and diversity of the communities.

The early Tertiary floras are a base for interpreting ancient climates.

The Paleogene geological history of Indian subcontinent is closely linked to Drift History of Indian Plate and its final collision with the Sino- Siberian Plate (Tibetan). The geology and biostratigraphy of Assam-Arakan basin including Meghalaya is now well established due to the impetus received from oil- exploration programme. In spite of these, the plate tectonic history, active paleogeographic reconstruction of the continent, evolution and diversification of biological ecosystem, during Paleogene, initiated geologists and paleologists to solve the stratigraphic problems in addition their routine searching for the economic resources.