Thanks grandma! Human longevity 'down to older females who carried on caring for their offspring's young families'

- **Computer simulation shows how with a little grand mothering animals with chimpanzee lifespans can develop human lifespans in 60,000 years**
- **Grandmothers would have helped to dig up tubers and crack nuts while younger adults got on with childrearing and hunting**

By Daily Mail Reporter

Human longevity is all thanks to our grandmothers' efforts to care for their family, new research suggests.
A theory that humans evolved longer adult lifespans than apes because grandmothers helped feed their grandchildren has been proved by a computer simulation of evolution, scientists claim.
Until now anthropologists were divided as to whether humans' long lives were down to the 'grandmother hypothesis' or 'hunting pothesis.'

Crucial to our evolution: Grandmothers who lived on to help with feeding their daughters offspring helped to pass on the longevity gene to future generations, scientists now believe

The grandmother hypothesis says that when grandmothers help feed their grandchildren after weaning, their daughters can produce more children at shorter intervals.
Because more children are born a few ancestral females who lived long enough to become grandmothers passed their longevity genes to more descendants, who had longer adult lifespans as a result.

The 'hunting hypothesis' argued that as resources dried up for human ancestors in Africa, hunting became better than foraging for finding food.
That led to natural selection for bigger brains capable of learning better hunting methods and clever use of hunting weapons and women then formed 'pair bonds' with men who brought home meat.
The increased brain size in our ape-like ancestors was the major factor in humans developing lifespans different from apes.
But a mathematical model confirms the grandmother theory to back up the evolutionary advantage early humans had over our ape cousins.
Kristen Hawkes, Professor of anthropology at the University of Utah, said: 'Grandmothering was the initial step toward making us who we are.'

The hypothesis stemmed from observations of Tanzania's Hazda hunter-gatherer people in the Eighties. Older women spent their days collecting tubers and other foods for their grandchildren.

Playtime with grandma: But in early hunter-gatherer societies, grandmothers would have been out digging up tubers and cracking nuts to feed youngsters as easily scavenge able habitats receded

Except for humans, all other primates and mammals collect their own food after weaning.
But as human ancestors evolved in Africa during the past 2million years, the environment changed, growing drier with more open grasslands and fewer forests where newly weaned infants could collect and eat fleshy fruits on their own.
Our ancestral mothers were faced with two choices - follow the retreating forests where infants could feed themselves or for grandmothers to set in.
That opened a window for the few females whose childbearing years were ending - grandmothers - to step in and help, digging up potato-like tubers and cracking hard-shelled nuts in the increasingly arid environment.
Those are tasks newly weaned apes and human ancestors couldn't handle as infants.

THE EMERGENCE OF WHEAT AND GLUTEN INTOLERANCE EXPLAINED

The emergence of wheat and milk allergies could be explained by a new account of the human race's 'out of Africa' expansion that began 60,000 years ago.

The comprehensive review of humans' anthropological and genetic records gives the most up-to-date story of how the global migration had a dramatic effect on human genetic diversity.

As small groups of modern humans migrated out of Africa in Eurasia and the Americas, the genetic diversity of their descendants was substantially reduced.

For example, geneticists have found that genes for lactose intolerance and gluten sensitivity began to emerge in populations expanding into Europe around 10,000 years ago.

The anthropological record helps explain this. It was around this time that humans embraced agriculture, including milk and wheat production.

The populations that prospered – and thus those who survived to pass on these mutations – were those who embraced these unnatural food sources.

The primates who stayed near food sources that newly weaned offspring could collect 'are our great ape cousins,' added Professor Hawkes.
'The ones that began to exploit resources little kids couldn't handle, opened this window for grandmothering and eventually evolved into humans,' she said.
The shift to longer adult lifespan caused by grand mothering, she went on, 'is what underlies subsequent important changes in human evolution, including increasing brain size.'
Professor Hawkes added: 'If you are a chimpanzee, gorilla or orang utan baby, your mum is thinking about nothing but you.
'But if you are a human baby, your mum has other kids she is worrying about, and that means now there is selection on you - which was not on any other apes - to much more actively engage her: "Mum! Pay attention to me!"
'Grand mothering gave us the kind of upbringing that made us more dependent on each other socially and prone to engage each other's attention.'
The simulation revealed that with only a little bit of grand mothering - and without any assumptions about human brain size - animals with chimpanzee lifespans evolve in less than 60,000 years so they have a human lifespan.
Female chimps rarely live past child-bearing years, usually into their 30s and sometimes their 40s. Human females often live decades past their child-bearing years.
The findings showed that from the time adulthood is reached, the simulated creatures lived another 25 years like chimps, yet after 24,000 to 60,000 years of grandmothers caring for grandchildren, the creatures who reached adulthood lived another 49 years - the same as human hunter-gatherers.
The study was published by the British journal Proceedings of the Royal Society.