Determining the beginning of life on Earth: the evolution time of living creatures based upon color changes within their blood with reference to the Theory of General Relativity and Euclidean geometry

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Abstract

The addition of acceleration in the form of redshift to the Earth, which in turn complements the notion of an expanding universe, may be used to calculate both distances and time periods. Using this information, if redshift to the color change of blood in living creatures' depending on respiration and circulation is also added, the theory of general relativity and rules of Euclidean geometry can be combined to define the biological evolutionary time of life. When the value of this physical redshift matches with the periodical reflexion color changes within a living creatures' blood, the information can estimate the average time period needed to develop a species in the Darwinian evolutionary process. Based upon this chronology, life may have started 4 billion years ago. The evolution time of man and vertebrates is between 1.93-3.53 billion years, while mollusca developed about 560-599 million years and plants developed in the range of 1.82-2.35 billion years. These values correlate well with the results of the today's radiometric geological dating.

Key words: high redshift galaxies, Earth, gravitation, general relativity, Euclidean geometry, Darwinian evolution, circulation-respiration, blood/lymph, respiratory pigments, color formation

1.Introduction

Do the color changes which may be noticed on the skin of living creatures bear any connection with their developing time in the Darwinian evolutionary process and if so, can it be used to trace their origin in time? Contrary of the simple light formation on inanimate objects, the color changes noticed in living creatures, which occurs as a result of their cardiac, respiratory and lymphatic system, may point to a time period displaying their evolutionary time in the biological evolution. Beyond the known color formations due to the biochemical reactions in living creatures, the pigmentation noticed through the transparent skin is more complex and takes place over a longer evolutionary period of time. This periodical color changing phenomenon may be termed 'biological redshift' and gives a possibility to chronologically determine the evolutionary time of living creatures. When acceleration in the form of red shift to the Earth is matched to the color change in a living creatures' blood, the information can be used to physically define biological evolutionary time. As these motions (physical and biological redshift) exist in one system, they appear parallel to each other in two dimensional models while forming a sphere with an inflation rate in three dimensional forms. When the acceleration of this sphere is known along with the entire plane angle and the deviation angle of a light beam grazing the Earth's surface, it becomes possible to determine unknown distances (time periods) by using the rules of trigonometry.

2. Determination of the size and age of the universe

According to the general theory of relativity, it is known that red shift is associated with time shift. With changes in the acceleration and the gravitational field, the frequency of light changes as well. This shift to a smaller light frequency on the spectrum line may be demonstrated by the formula: $\nu = \nu_o \cdot (1+\Delta\Phi \cdot c^{-2})$. The gravitational potential difference ($\Delta\Phi$) equals the product of the acceleration of free fall (g) and the distance (h) between two points of different gravitational potential: $\nu = \nu_o \cdot (1+g \cdot h \cdot c^{-2})$ [1]. When using Einstein's principle of equivalence and applying it to the high redshifted Earth (with its gravitation field) when an accelerated system and gravitational field exist together at the same time, an unknown distance (h) can be calculated pointing towards the origin of the universe. This distance (h) extending from the cosmos today towards the birth of the universe might be termed ‘short evolving distance’, and may be calculated:

$$h = \frac{\nu - \nu_0}{\nu_0} \cdot \frac{c^2}{g_{Earth,s\tan d}}, \quad (1)$$

where ν is the changed frequency, ν_o is the initial frequency, c is the speed of light and Φ is the gravitation potential difference.

The ‘short evolving distance’ (h) may be used to give rise to (H) which might be termed ‘long evolving distance’ in the range of the radius of the universe by the ratio of the entire plane angle (2π) and the deviating angle (α) of a light beam which passes near the Earth’s surface as a result of the gravitational field: h/α=H/2π [2]. The deviation angle (α) of a light beam is: $\alpha=2\cdot G\cdot M\cdot c^{-2}\cdot R^{-1}$ [1], therefore the age of the universe can be calculated as:

$$H_{universe} = \frac{\nu - \nu_0}{\nu_0} \cdot \frac{c^4}{g_{Earth,s\tan d}} \cdot \frac{\pi \cdot R_{Earth,mean}}{G \cdot M_{Earth}}, \quad (2)$$

where $H_{universe}$ is the radius of the universe, $(\nu-\nu_o)/\nu_o$ is the redshift of the Earth (as a component of high redshifted Milky Way Galaxy), c is the speed of light ($2.99792458\cdot10^8$ $m\cdot s^{-1}$), π is 3.141592653, R is the volumetric mean radius of the Earth ($6.371005\cdot10^6$m), g is the standard gravity of the Earth (9.80665 $m\cdot s^{-2}$), M is the mass of the Earth ($5.97219\cdot10^{24}$kg) [3] and G is the gravitational constant ($6.673848\cdot10^{-11}m^3\cdot kg^{-1}\cdot s^{-2}$) [4].

Numerically:

$$H_{universe} = 3.141592653 \cdot \frac{80.77608713 \cdot 10^{32} m^4 \cdot s^{-4} \cdot 3.141592653 \cdot 6.371005 \cdot 10^6 m}{9.80665 m \cdot s^{-2} \cdot 6.673848 \cdot 10^{-11} m^3 \cdot kg^{-1} \cdot s^{-2} \cdot 5.97219 \cdot 10^{24} kg} = 12.99451 \cdot 10^{25} m. (3)$$

This ‘long evolving distance’ (H) which was determined above can be used to calculate an ‘evolving time’ (T) by dividing it by the speed of light (c), which in turn points toward the time the universe was formed. When considering the large redshift ($(\nu-\nu_o)/\nu_o$ = 3.141592653) which may be measured from farther stars [5], the distance equals $12.99451\cdot10^{25}$ m, which in time (T=H/c) is $4.3345\cdot10^{17}$s. Since one year is $3.1556926\cdot10^7$s [6], this equates to 13.7355 billion years [7], which is the age of the universe according to our present knowledge [8].

3. Determination of the evolutionary age of living creatures

When the range of reflective color changes noticed in the skin of living creatures as a result of blood oxygen saturation is complemented to the same extent of redshift in the spectrum line of visible light as a result of gravitation and acceleration, the two phenomena may be connected in their relation to time shift. As a result of this, a distance can be calculated which points towards the beginning of life (Fig.1).

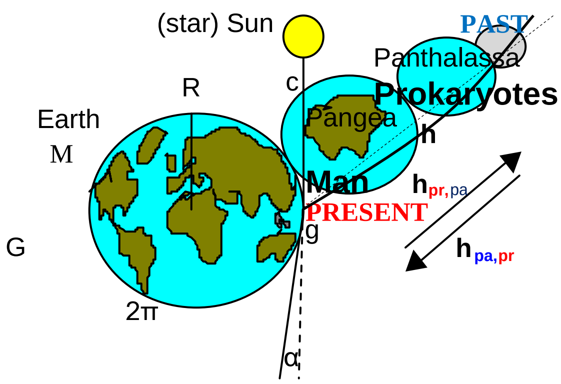

Fig.1. Looking back to the past *

This distance might be termed ‘short evolution distance’ when applied to living creatures, which is numerically equal to the physical ‘short evolving distance’ in terms of space.

$$h_{past,present} = \frac{\nu - \nu_0}{\nu_0} \cdot \frac{c^2}{g_{Earth,s\tan d}} = \frac{\nu_{blue} - \nu_{red}}{\nu_{red}} \cdot \frac{c^2}{g_{Earth,s\tan d}} \quad (1)$$

where ν is the (higher) frequency of the living creatures blood’s color, ν_o is the (lower) initial frequency, g is the acceleration of free fall (9.80665 $m \cdot s^{-2}$), c is the speed of light (2.99792458·10^8 $m \cdot s^{-1}$), and h is the unknown distance between two points in a gravitational field.

Bent by g, this distance is long enough to calculate a point in time, while the radius of the sphere points to each species’ origin. These distances are dependent on the ratio of the wavelength shift, which may be matched to the color changes in the skin as a result of the gas saturations of blood in species at different stages of biological evolution (Fig.2) *. In this manner, a chronological sequence may be established.

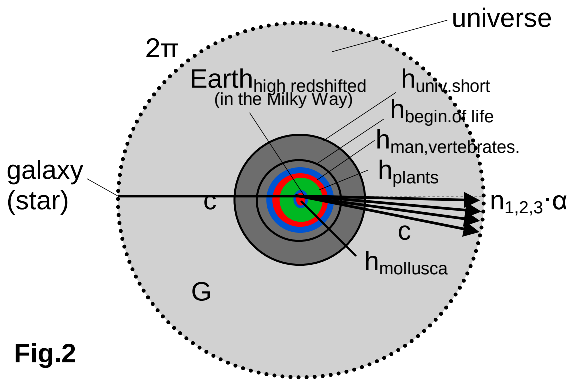

Fig.2

The distance (h) from the ‘point’ of beginning of life to the appearance of man ($h_{pa,pr}$) can be given by the ratio of entire plane angle (2π) and deviating angle (α) of a light beam passing near the Earth’s surface caused by gravitational field: $h_{pa,pr} : \alpha = H_{pa,pr} : 2\pi$. (Fig.3) *

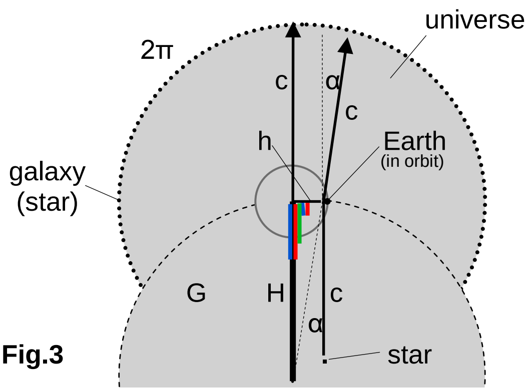

Fig.3

Fig.3. Relation between the entire plane angle (2π) and the deviation angle (α) of the light beam passing through the gravitational field of the Earth’s surface. There is a large distance growth from ‘short evolution distance' (h) to the ‘long evolution distance’ ($H_{past,present}$) the point of the beginning of life, which is lying close to the present edge of the radius of the universe (H).*

This is shown from other perspective, at right angles, in Figure 4.*

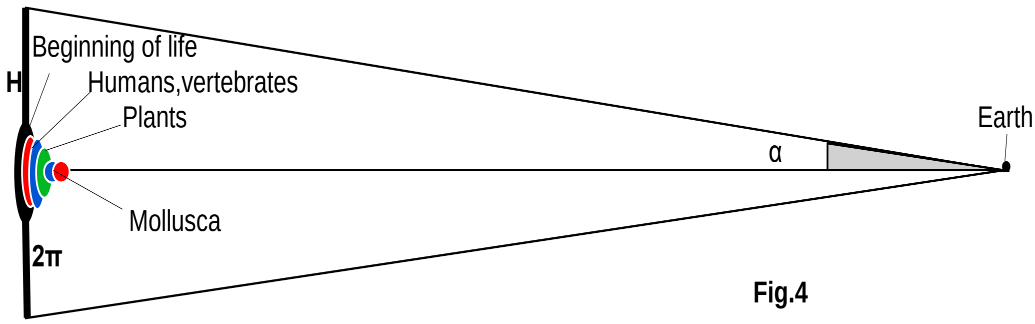

Fig.4

With the ratio calculated from the known 'short evolution distance' ($h_{past,present}$) and the known two angles (α,2π), an unknown enormous distance can be calculated, which could be named 'long evolution distance' ($H_{past,present}$). The deviation angle (α) of light beam, which passes near a celestial body's surface, in this case the Earth, according to Einstein's formula: $\alpha = 2\cdot G\cdot M\cdot c^{-2}\cdot R^{-1}$, thus:

$$H_{universe} = \frac{\nu - \nu_0}{\nu_0} \cdot \frac{c^4}{g_{Earth,s\tan d}} \cdot \frac{\pi \cdot R_{Earth,mean}}{G \cdot M_{Earth}}, \quad (2)$$

where $H_{universe}$ is the maximum distance from the origin of the universe together with the evolution time of man, $(\nu-\nu_0)/\nu_0$ is the physical or biological redshift, c is the speed of light ($2.99792458\cdot10^8$ $m\cdot s^{-1}$), π is 3.141592, R is the volumetric mean radius of the Earth ($6.371005\cdot10^6$m), g is the standard gravity of the Earth (9.80665 $m\cdot s^{-2}$), M is the mass of the Earth ($5.97219\cdot10^{24}$kg) and G is the gravitational constant ($6.673848\cdot10^{-11}m^3\cdot kg^{-1}\cdot s^{-2}$).

The evolution time of man may be calculated from the difference in the two values of redshift between the 'long evolving distance' of the universe and the 'long evolution distance' of living creatures. This computed distance extends from the past till the present day up to a value of redshift of 3.141592:

$$H_{universe} - H_{evolution\,dist.livings} = H_{evolving\ dist.rest}, \quad (3)$$

therefore:

$$H_{evolving\ dist\ rest} = 3.1415 \cdot \frac{c^4\cdot\pi\cdot R_{Earth,mean}}{g_{s\tan d}\cdot G\cdot M_{Earth}} - \frac{\nu-\nu_0}{\nu_0}\cdot\frac{c^4\cdot\pi\cdot R_{Earth,mean}}{g_{s\tan d}\cdot G\cdot M_{Earth}} = \left(3.1415 - \frac{\nu-\nu_0}{\nu_0}\right)\cdot\frac{c^4\cdot\pi\cdot R_{Earth,mean}}{g_{s\tan d}\cdot G\cdot M_{Earth}}. \quad (4)$$

When considering various species at different stages of development with a minimum 0.137 and maximum 0.923 redshift in their blood (eq.6.2-4 and 5.1), the distance will increase from $0.566\cdot10^{25}$ m to $3.818\cdot10^{25}$ m. Therefore:

$$H_{universe} - H_{evolution\,dist.livings\ \min.} = H_{evolving\ dist.rest\ \max.} \quad (5)$$

and:

$$H_{universe} - H_{evolution\,dist.livings\ \max.} = H_{evolving\ dist.rest\ \min.} \quad (6)$$

The maximum remaining distance of the 'long evolving distance' of the universe numerically is:

$$H_{evolving\ dist.rest\ \max.} = (3.1416-0.137)\cdot\frac{80.77608713\cdot10^{32}m^4\cdot s^{-4}\cdot3.141592653\cdot6.371005\cdot10^6 m}{9.80665m\cdot s^{-2}\cdot6.673848\cdot10^{-11}m^3\cdot kg^{-1}\cdot s^{-2}\cdot5.97219\cdot10^{24}kg}, \quad (7)$$

thus:

$$H_{evolving\ dist.\ rest\ \max.} = 3.0046\cdot4.13628092\cdot10^{25} = 12.4278m, \quad (8)$$

the minimum remaining distance of the 'long evolving distance' of it is:

$$H_{evolving\ dist.rest\ \min.} = (3.141592-0.923)\cdot4.13628\cdot10^{25} = 2.2186\cdot4.13628\cdot10^{25} = 9.1767\cdot10^{25}\ m. \quad (9)$$

The minimum value of the 'long evolution distance' of living creatures is:

$$H_{evolution\,dist.livings\ \min.} = H_{universe} - H_{evolving\ dist.rest\ \max.} = 12.9945\cdot10^{25}m - 12.4278\cdot10^{25}m = 0.5667\cdot10^{25}m, \quad (10)$$

the maximum value of the ‘long evolution distance’ can be calculated as:

$$H_{evolution\,dist.livings\ \max.} = H_{universe} - H_{evolving\ dist.rest\ \min.} = 12.9945 \cdot 10^{25} m - 9.1767 \cdot 10^{25} m = 3.8178 \cdot 10^{25} m. \quad (11)$$

In this case as well, the ‘long evolution distance’ ($H_{pa,pr}$) can be calculated into evolution time ($T_{pa,pr}$) by dividing it by the speed of light (c) which will be shown later.

When looking at a red-blue color change at an average frequency, the ‘long evolution distance’ ($H_{present,past}$):

$$H_{present,past} = \frac{\nu_{red} - \nu_{blue}}{\nu_{blue}} \cdot \frac{c^4}{g_{Earth,s\tan d}} \cdot \frac{\pi \cdot R_{Earth,mean}}{G \cdot M_{Earth}}, \quad (12)$$

and evolution time ($T_{present,past}$) would be both smaller and negative, pointing from the present to the past (-1.666 billion years). Nevertheless, the larger positive values which are in line with the customary direction of the Darwinian evolution process [9] pointing from past to the present ($T_{past,present}$) may be considered the basis of chronology.

However, when considering a biological blueshift in a figure of $(\nu - \nu_o)/\ \nu_o$= (390-750)/750= - 0.48 and subtract it from the value of the Earth’s maximal redshift (3.1415), the radius and age of the cosmos increase. When movement occurs in the opposite direction, the absolute value of the velocity between living creatures and Earth will grow. The increased space which is needed for the development of living creatures results in an expansion of the radius and extent of the universe’s existence with a maximum value of 2.09 billion years. In this manner, the increased lifespan of the cosmos results in it being 15.83 billion years old.

$$H_{univ+evol.dist.beg.of\ life(blueshift)} = 3.14 \cdot \frac{c^4 \cdot \pi \cdot R_{Earth,mean}}{g_{s\tan d} \cdot G \cdot M_{Earth}} - \frac{\nu - \nu_0}{\nu_0} \cdot \frac{c^4 \cdot \pi \cdot R_{Earth,mean}}{g_{s\tan d} \cdot G \cdot M_{Earth}} = \left(3.14 - \frac{390-750}{750}\right) \cdot \frac{c^4 \cdot \pi \cdot R_{Earth,mean}}{g_{s\tan d} \cdot G \cdot M_{Earth}}, (13)$$

therefore:

$$H_{universe+evolution\,dist\ beg.of\ life(blueshift)} = \left(3.14159265 - \frac{390-750}{750}\right) \cdot 4.13628 \cdot 10^{25} m = 14.98 \cdot 10^{25} m, \quad (14)$$

and dividing it by both the speed of light and the number of seconds in a year:

$$T_{universe\,total\ (\max\ physical\,redshift + |\max\ \ biological\ blueshift|)} = 15.83 \cdot 10^9\ years. \quad (15)$$

4. Determination of the evolution time of man

Many patients suffering from serious pulmonary and cardiac disease exhibit dark blue skin and mucous membrane coloration. In medical practice, this symptom is termed cyanosis [10]**,** which is dependent upon the oxygen saturation of blood along with the condition of the circulatory and respiratory systems. In day light, this discoloration phenomenon occurs due to the absorption of the red and the reflection of the blue parts of the visible light spectrum [11]**.**

The same color change can be observed in healthy subjects as a result of tissue respiration when oxygenated arterial blood is converted into deoxygenated venous blood. During pulmonary respiration, blood in the lungs becomes saturated with oxygen due to a carbon dioxide exchange. Along the visible light spectrum, this exchange results in the blue side of the spectrum being absorbed while the red is reflected, therefore the blood appears redder. This periodical color change can be matched to a special range of the spectrum on the basis of their color formation. These are approximately: blue color (ν): 705-620 $\cdot\ 10^{12}\ s^{-1}$ (mean frequency: 662.5 $\cdot\ 10^{12}\ s^{-1}$), red color (ν_o): 430-390 $\cdot\ 10^{12}\ s^{-1}$ (mean frequency: 410 $\cdot\ 10^{12}\ s^{-1}$).

$$H_{evolution\,dist.man} = \frac{\nu_{blue} - \nu_{red}}{\nu_{red}} \cdot \frac{c^4}{g_{Earth,s\tan d}} \cdot \frac{\pi \cdot R_{Earth,mean}}{G \cdot M_{Earth}} = 0.6158 \cdot 4.13628 \cdot 10^{25} m = 2.5473 \cdot 10^{25} m, \quad (1)$$

Considering the inside and outside edge of each color range in the blue-red, a minimum and a maximum ($T_{pa,pr}$) value can be given. These are $(\nu-\nu_o)/\nu_o$= (620-430)/430=0.4418 i.e. 1.9318 billion years and $(\nu-\nu_o)/\nu_o$ = (705-390)/390=0.8077 i.e. 3.5313 billion years, respectively, resulting in a mean frequency of 2.6926 billion years. {Pointing from the present to the past ($T_{pr,pa} = -1.666\cdot10^9$ years)}

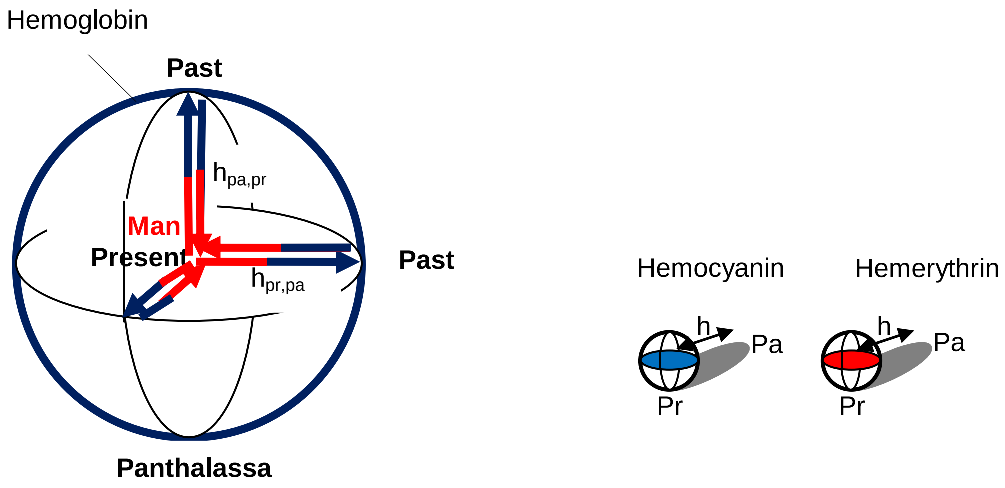

Fig. 5 Relationship between present and past in case of different respiratory pigments

5. Determination of the beginning of life on Earth

Once both pulmonary and cardiac failure have occurred and clinical death has already set in [12], the above described cyanosis disappears and the patient's skin appears grey. Blood lying in the deeper layers of the transparent skin loses its red color and appears black. As circulation has ceased at this time, only the skin's white color becomes manifest (pallor mortis) [13], which gives the white component of visible grey skin color. When the whole spectrum has been absorbed /$(\nu-\nu_o)/\nu_o$ =(750-390)/390= 0.923/ the calculated distance is:

$$H_{evolution\,dist.beg.of\,life} = \frac{\nu_{violet\,lateeral} - \nu_{red\,lateral}}{\nu_{red\,lateral}} \cdot \frac{c^4}{g_{Earth,s\tan d}} \cdot \frac{\pi \cdot R_{Earth,mean}}{G \cdot M_{Earth}}. \quad (1)$$

Numerically:

$$H_{evolution\,dist.begin.of\,life} = 0.923 \cdot 4.13628 \cdot 10^{25} m = 3.8181 \cdot 10^{25} m\ . \quad (2)$$

The 'long evolution distance' (H) can be used to calculate 'evolving time' (T) by dividing it by the speed of light (c). Which in time (T=H/c) is $1.2735\cdot10^{17}$s. Since one year is $3.1557\cdot10^{7}$s, this ($T_{pa,pr}$) equates to $0.4035\cdot10^{10}$ years or 4 billion years.

This calculated time of 4 billion years is approximately equal to the proposed appearance of the ancient oceans, which contain organic molecules considered to be the basis of the beginning of life.

6. Determination of the evolution time of living creatures on the basis of the color changes in animals' blood and lymphatic system

Since the circulatory and respiratory systems of *mammals* and *birds* may be considered to be at the same level of development as that of humans, they too can exhibit cyanosis [14]. Considering these facts, it is probable that they have the same evolution time as humans. On the other hand, the less developed vertebrates such as *reptiles*, *amphibians* and *fish* which have a minimal blue-red shift may have a shorter evolution distance and time.

$$H_{evolution\,dist.\,fish} = \frac{\nu_{blue.medial} - \nu_{red.medial}}{\nu_{red.medial}} \cdot \frac{c^4}{g_{Earth,s\tan d}} \cdot \frac{\pi \cdot R_{Earth,mean}}{G \cdot M_{Earth}} = 0.4418 \cdot 4.13628 \cdot 10^{25} m. \quad (1)$$

The evolution time ($T_{pa,pr}$) equals 1.9316 billion years.

Invertebrates have only a limited number of respiratory pigments. The frequency shift of their lymph falls between the two margins of their reflected colour range, which may be used in their calculations (Fig. 6) [15].

Hemocyanin is the respiratory lymph pigment of decapod Crustacea, stomatopod Crustacea, cephalopod, gastropod Mollusca, as well as some arachnids. It is blue when oxygen is attached to it and colorless when not attached. If the two ends of blue are: $\nu = 705 \cdot 10^{12}\ s^{-1}$ and $\nu_o = 620 \cdot 10^{12}\ s^{-1}$ respectively, then the ratio of their attached red shift is $(\nu - \nu_o)/\nu_o = 0.137$; consequently the evolution distance from the past towards the present.

$$H_{evolution dist. mollusca\ hemocyanin} = \frac{\nu - \nu_0}{\nu_0} \cdot \frac{c^4}{g_{Earth,s\tan d}} \cdot \frac{\pi \cdot R_{Earth,mean}}{G \cdot M_{Earth}} = 0.137 \cdot 4.136 \cdot 10^{25} m = 0.5666 \cdot 10^{25} m. \quad (2)$$

The evolution time ($T_{pa,pr}$) equals 598.9 million years.

Hemerythrin, which is found in very few animals including sipunculids and brachiopod Lingula turns the lymph red when bonding with oxygen; however, when it carries carbon dioxide it is essentially colorless. If the ratio of red shift of the two ends of red is $(\nu - \nu_o)/\nu_o = (440-390)/390 = 0.128$, the evolution distance is:

$$H_{evolution dist. mollusca\ hemerythrin} = \frac{\nu - \nu_0}{\nu_0} \cdot \frac{c^4}{g_{Earth,s\tan d}} \cdot \frac{\pi \cdot R_{Earth,mean}}{G \cdot M_{Earth}} = 0.128 \cdot 4.136 \cdot 10^{25} m = 0.5294 \cdot 10^{25} m. \quad (3)$$

Then the evolution time ($T_{pa,pr}$) equals 559.6 million years.

Chlorocruorin in annelids on the other hand does not show any color change within the phases of respiration and circulation, but instead only show dichroism dependent on concentration. Despite this, a red shift can be matched to its colour in the green range of the spectrum $(\nu - \nu_o)/\nu_o = (605-535)/535 = 0.130$, so $H_{pa,pr}$ is:

$$H_{evolution dist. mollusca\ chlorocruorin} = \frac{\nu - \nu_0}{\nu_0} \cdot \frac{c^4}{g_{Earth,s\tan d}} \cdot \frac{\pi \cdot R_{Earth,mean}}{G \cdot M_{Earth}} = 0.13 \cdot 4.136 \cdot 10^{25} m = 0.5376 \cdot 10^{25} m. \quad (4)$$

The evolutionary time of it ($T_{pa,pr}$) is 568.3 million years.

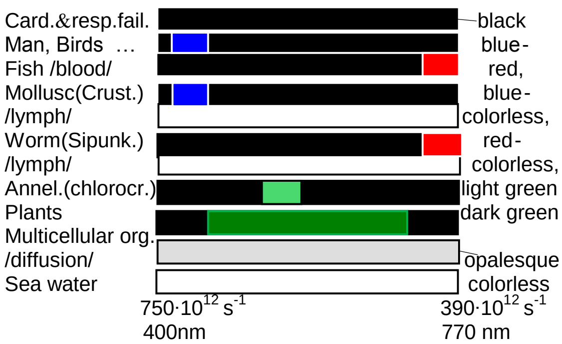

Fig.6

Fig. 6 Expected reflection ranges of lymph and blood in living creatures

7. Evolution time of plants

While plants do not demonstrate color changes based on their respiration or circulation, they do have a higher degree pigment, *chlorophyll*, which is responsible for their coloration [16]. Chlorophyll a and b have two absorption maximums at the zone of the indigo and orange of the spectrum (Chl.a: λ=430 nm and 662 nm, ν=697.67s^{-1} and ν=453.17s^{-1}, Chl.b: λ=453nm and λ=642nm, ν=662.25·10^{12} s^{-1} and ν=467.29·10^{12} s^{-1}). This wider zone between the two spikes, which contain blue, green, yellow and orange, is not absorbed. The two ends of the dark green reflection range provide the ratio of redshift (Chl.a: $(\nu-\nu_o)/\nu_o$= (697.67-453.17)/453.17 = 0.445 and Chl.b: $(\nu-\nu_o)/\nu_o$=(662.25-467.29)/467.29=0.4172.

Based on this, the estimated evolution distance of plants is:

$$H_{evolution\,dist.\,plants\,chlor.a} = \frac{697.67-453.17}{453.17}\cdot\frac{c^4}{g_{Earth,s\tan d}}\cdot\frac{\pi\cdot R_{Earth,mean}}{G\cdot M_{Earth}} = 0.5395\cdot 4.136\cdot 10^{25}m = 2.231\cdot 10^{25}m, \quad (1)$$

and:

$$H_{evolution\,dist.\,plants\,chlor.b} = \frac{662.25-467.29}{467.29}\cdot\frac{c^4}{g_{Earth,s\tan d}}\cdot\frac{\pi\cdot R_{Earth,mean}}{G\cdot M_{Earth}} = 0.4172\cdot 4.136\cdot 10^{25}m = 1.725\cdot 10^{25}m. \quad (2)$$

This in time (T=H/c) falls in the range of 0.7443·10^{17}s and 0.5755·10^{17}s. Since one year is 3.1556926·10^{7}s, the evolution time of plants is between 1.82 and 2.35 billion years.

Looking back at the process of evolution from the less developed animals up to humans, their lymph and blood colors can be matched step by step with greater and greater redshifts. {However, no redshift can be adjusted to incorporate primitive organisms such as Porifera (sponges) or Cnidarians (corals, medusa) which lack respiratory pigments and breathe by way of diffusion.}

These evolutionary time periods corresponds approximately with the result of geological dating [17] as determined the decay of radioactive isotopes (Fig. 7)

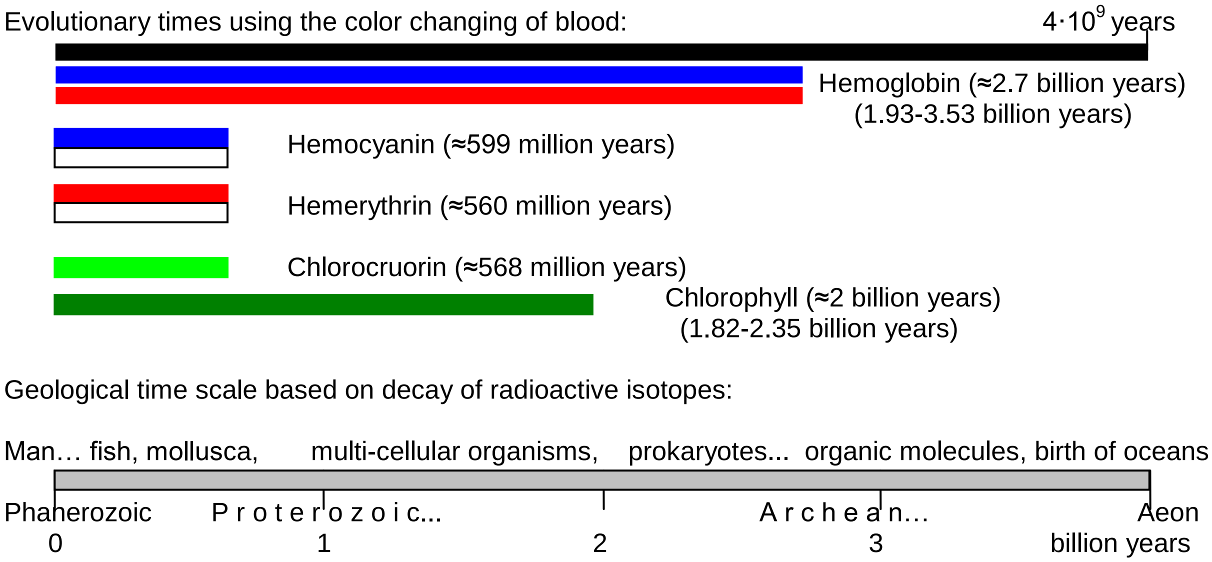

Fig. 7 Chronological sequence established by the color change of different respiratory pigments

Final Thoughts

Currently the described phenomenon of dating in this method is difficult to corroborate, yet it is presumably accurate based on its correlation with today's radiometric dating.

References

[1] Einstein A. Über den Einfluß der Schwerkraft auf die Ausbreitung des Lichtes. Annalen der Physik. 1911;35:898-908.

[2] Abdullah MG, Anderson MC, Anderson MJ, et al. Encyclopaedia Britannica. Eratosthenes of Cyrene. http://www.britannica.com/biography/Eratosthenes-of-Cyrene. Accessed 21 Dec. 2015.

[3] Williams DR. Planetary fact sheet 2015. http://nssdc.gsfc.nasa.gov/planetary/factsheet/sunfact.html. Accessed 21 June 2015.

[4] Committee on Data for Science and Technology (CODATA).
CODATA Recommended Values of the Fundamental Physical Constants: 2010.
http://physics.nist.gov/cuu/Constants/index.html. Accessed 12 July 2015.
[5] Hubble EP. A relation between distance and radial velocity among extra-galactic nebulae. Astronomy. 1929;15(3):168-173.
[6] Advanced converter: Time conversion calculator.
http://www.advancedconverter.com/unit-conversions/time-conversion. Accessed 15 Aug. 2015.
[7] Nagy TE. The age of the universe, the size of the Sun and planets based upon the Theory of General Relativity and Euclidean geometry. http://viXra:1215.0254. Accessed 4 Nov. 2015.
[8] Bennett CL,Larson D, Weiland JL, et al. Nine-Year Wilkinson Microwave Anisotropy Probe (WMAP) Observations: Final maps and results 2013. http://arXiv:1212.5225. Accessed 15 Dec. 2015.
[9] Darwin C. On the Origin of Species by Means of Natural Selection. London: John Murray; 1859.
[10] Fauci AS, Braunwald E, Kasper DL, et al. Harrison's Principles of Internal Medicine. 17th ed. New York: McGraw-Hill; 2011.
[11] Thews G, Mutschler E, Vaupel P. Human Anatomy, Physiology and Pathophysiology. Amsterdam: Elsevier; 1985.
[12] Charlton R. Diagnosing death. BMJ**.** 1996;313(7063):956-7.
[13] Schäfer AT. "Colour measurements of pallor mortis". International journal of legal medicine 2000; 113 (2): 81–3. doi:10.1007/pl00007713.
[14] Nagashima M et al. Cardiac performance after deep hypothermic circulatory arrest in chronically cyanotic neonatal lambs. J Thorac Cardiovasc Surg. 2000;120(2):238-46.
[15] Fox HM, Vevers G. The Nature of Animal Colours London: Sidgwick and Jackson; 1960.
[16] Purves W, Orians G. Life, The Science of Biology. 2nd ed. Sunderland, Massachusetts: Sinauer; 1987.
[17] Cohen KM, Finney SC, Gibbard PL. International Chronostratigraphic Chart (PDF), International Commission on Stratigraphy. 2015. http://www.stratigraphy.org/index.php/ics-chart-timescale. Accessed 16 Dec. 2015.

* Figures in 1-5 are non proportionate.

Nagy, T.E., December 22, 2015