



Science

AGING AND CELLULAR MAGNETIC PROFILES DOCUMENTATION IN HAIR FOLLICLES CYCLES UTILIZING A NOVEL TABLETOP MAGNETIC PROFILES TECHNIQUE

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Abstract

Background: Recently, a tabletop optical microscopy technique was introduced to display living tissue magnetic profiles. The purpose of this manuscript is to introduce via the aforementioned technique in vitro experiments showing the effect of aging on tissue biophysical changes and documentation of cross species magnetic profiles. The term “metabolism” entails electron transfers involving movement of electrons from donor to acceptor, magnetic profiles are theorized to be a reflection of metabolic levels.

Methods: The magnetic profiles technique calls for the completion of a blood smear on a 25x75x1mm glass slide. For this manuscript, the water in the original smear was allowed to evaporate; and a second smear was superimposed on the first. On the center surface of the top slide, freshly plucked scalp human hairs or plants and insects samples were processed. The preparations were then individually viewed microscopically and images recorded.

Results: All living hair samples, ants and flower reproductive organs showed presence of magnetic profiles.

Discussion: Images demonstrate that as tissue ages, (Experiments in Hair Follicles), there is a decrease in magnetic profiles (read metabolism), that these profiles display a chaotic interaction directly proportional with age. It could be inferred that the magnetic profiles experiments presented are equivalent to living tissue energy detection (read metabolism). The profiles technique could be applied to a wide range of cross species interactions. The term “metabolism” entails electron transfers involving movement of electrons from donor to acceptor along the electron transfer chain thus inducing magnetic profiles.

Keywords: Metabolic Rate; Age and Biomagnetism; Magnetic Profiles; Hair Growth Phases; Anagen; Catagen; Telogen; Hair Diseases; Alopecia.

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1. Introduction

The magnetic Profiles Technique

The main purpose of this manuscript is to introduce the reader to the availability of an optical microscopy tabletop technique that displays living matter magnetic profiles, this includes animals, plants and also the interaction between animals and plants (1). A direct relationship between a prevalence of electromagnetism and energy emission from the hair dermal papilla had been previously demonstrated (2) and a number of publications have described a direct relationship between cellular aging and decrease in the basal metabolic rate (3). Historically a molecular approach has been used to evaluate metabolic changes (4,5).

In Vitro Experiments Aging and Cellular Energy

The hair follicle has been described as a miniorgan, with a variety of different cells having cellular divisions, and fluctuating metabolic process during growth cycles (6). Basically there is one main growth stage (Anagen), followed by a regressive (Catagen) and a resting one (Telogen) (Exhibit I).

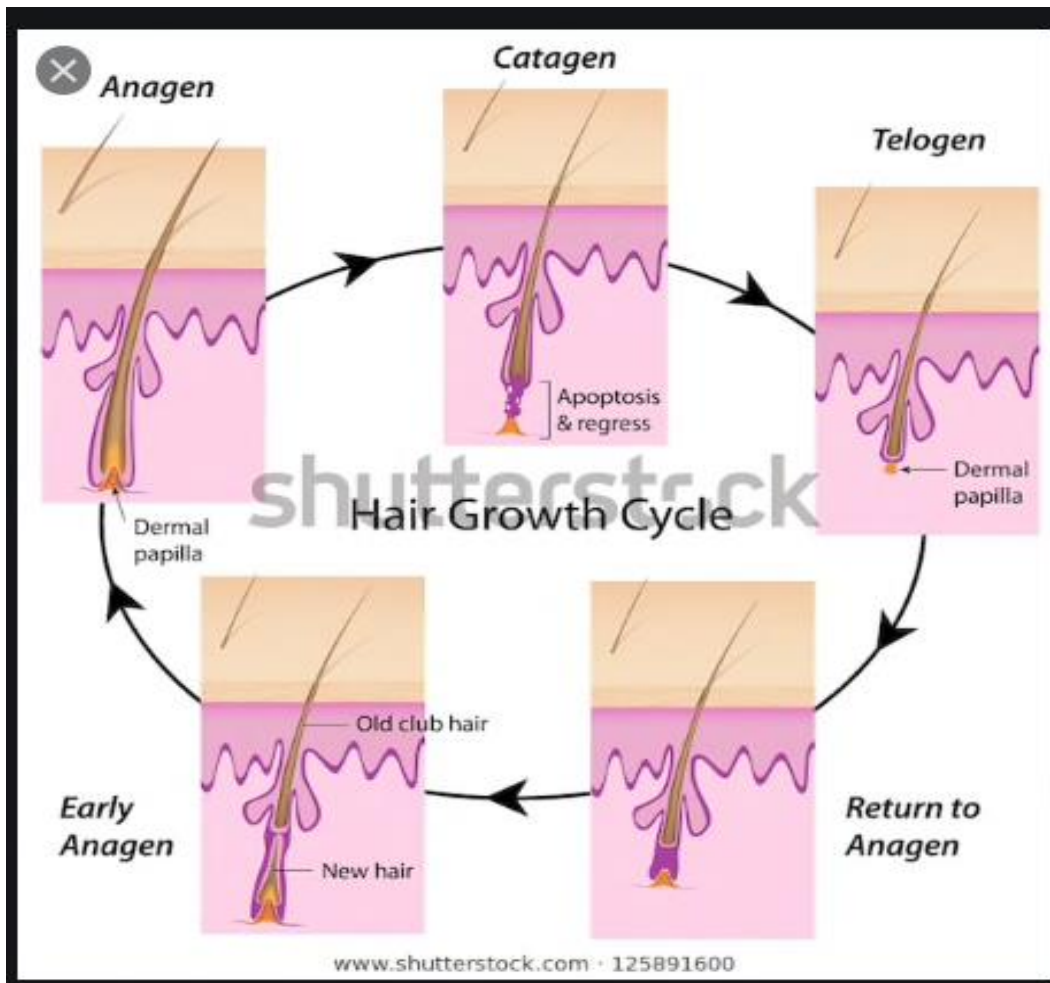


Exhibit I: Hair Growth Cycles

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The purpose of this manuscript is to confirm via a biophysical method that detects magnetic profiles with previous molecular approach studies reports of residual metabolic activity in the hair follicle dermal papilla during the apoptosis and regress cycles. One of those studies contradict the historical notion of a total hair cycle shutdown or resting Telogen phase emphasized by the direct approach of the title “Resting no more: redefining Telogen...” (7). By using a molecular approach, experimental provocative maneuvers using a commonly used chemotherapy drug (cyclophosphamide) aimed to “induced follicle dystrophy and alopecia was used. In the experiments, massive keratinocyte apoptosis occurred in the entire distal hair follicle, except in the dermal papilla”.

2. Material and Methods

The magnetic profiles technique calls for the preparation of a blood smear on a 25x75x1mm glass slide (8). For this manuscript, the water in the original smear was allowed to evaporate for 60±15 seconds; and a second evaporated smear was superimposed on the first (**see note below**). Both smears were then covered or sandwiched by a second similar glass slide. On the center surface of the top slide, a freshly plucked scalp human hairs on different growth ages (Anagen Catagen and Telogen) were placed and covered by two drops of distilled water. The preparations were then individually viewed microscopically and images recorded. The information downloaded to a computer photo application.

A detailed narrative describing the “Magnetic Profiles” technique could be found in the Materials and Methods Section of:

<http://www.jnsoci.org/files/html/2016/e186.htm>

Technical Note: By having two superimposed single blood cells blood smears allows for a sharper visual qualitative delineation display of the magnetic profiles lines.

3. Results

All three human hair growth cycles expressed documented biomagnetic profiles. The initial growth stage (Anagen) showed evenly distributed magnetic profiles (Figs 1,2,3 plus video). The older hairs (Catagen and Telogen) showed asymmetrical profiles, expressed as various areas void of profiles and other types of abnormalities. The Telogen phase showed an active dermal papilla, with a reduced biomagnetic activity in mid follicle (Figs 4,5,5A,5B, 5C & 6 plus videos). In the Catagen-Telogen follicle shrinking cycle images show: Curving linear Lorenz Forces as seen in Figures 5,5A,5B).

4. Discussion

The term “metabolism” entails electron transfers involving movement of electrons from donor to acceptor along the electron transfer chain thus inducing a current within each cell and from cell to cell, therefore and according to Faraday’s Law and the Hall Effect, these currents induce electromagnetic fields (EMFs) perpendicular and horizontal, respectively, to the plane of the living tissues. Recently, a tabletop optical microscopy technique was introduced to display living tissue magnetic profiles.

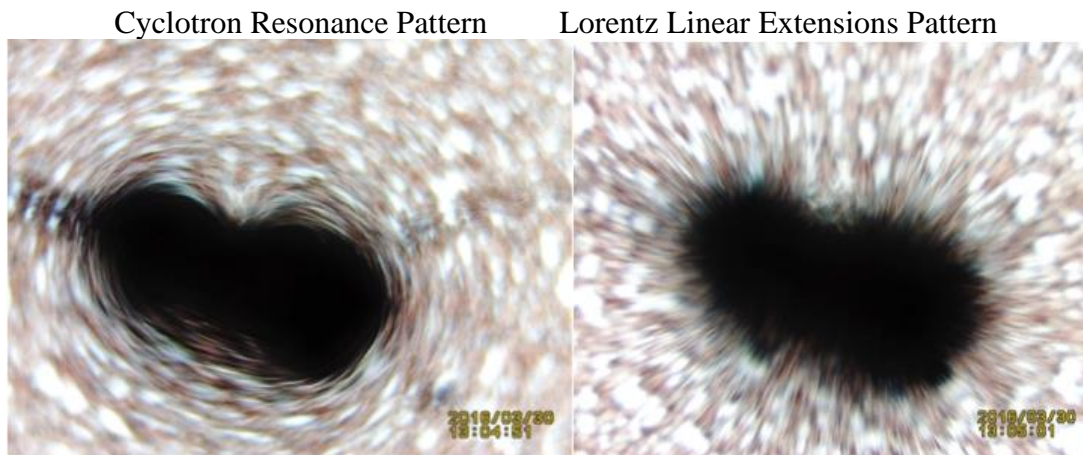
As stated in the introduction, the main purpose of this manuscript is first to familiarize the reader with a novel slide assembly tabletop microscopy method designed to obtain magnetic profiles from living matter (Hair follicles in this case); and to demonstrate with this simple technique details of ie: The prevalence of metabolic activity (read magnetic profiles) in the no longer named resting Telogen hair follicle cycle as pointed by the large black arrow to the left of image in Figure 5 below, which had been previously molecularly demonstrated (9). Details of the technique can be obtained by linking to a paper that for the first time introduced the technique in the literature: <http://www.jnsoci.org/files/html/2016/e186.html>

Magnetic Profiles Technique Explained from a Physicists Perspective

Results from the original experiments were of an unexplained nature. This author was surprised as to the fact that such a simple technique could produce images of magnetic profiles from living tissue; therefore hair follicles were immersed in 35% H₂O₂ to induce a total depletion of the enzyme catalase. In a separate publication, the technique was challenged and validated by provocative maneuvers designed to document the lack of magnetic profiles in dead follicles (10) (Figure S1 below).

Seeking Professional Opinion

This biologist needed help; and the images were sent for interpretation to a renowned physicist. His written reply is on file and reproduced in Exhibit I below:



The image that shows circumferential lines is a product of cyclotron resonance, which is caused by the curving of charges in a magnetic field as the electrical field changes polarity across the conductive bodies.

The linear extensions viewed represent Lorentz Forces as a result of the Hall effect. There is a cross sectional EMF induced secondary to the electromagnetic fields of the light which is oriented at right angles to the planes of the blood and hair. The Hall effect accounts for the accumulation of charges at the edges.

EXHIBIT I Magnetic Profiles from a Physicist Point of View Single Hair Follicle Metabolism and Lorentz Forces As shown in Figure 4 below.

Duplicated from: Embi AA Embi AA (2016) Human Blood Magnetic Profiles Interactions: Role in Mosquito Feeding. Journal of Nature and Science (JNSCI), 2(3):e186.

Once the technique is mastered, the reader could explore the until now less traveled road of displaying living matter magnetic profiles. Below are examples of the potential experimental range seen in mages that could be obtained from plants, insects or cross-species interactions (Figures S2 thru S4).

Possible Medical Applications

The effect of medication therapy on the hair follicle metabolism could now be easily evaluated. Information as to the progress of diseases such as Alopecia is now a possibility (11). The question arises: How are magnetic profiles (read metabolism) expressed in the progression of Alopecia?

...or: Could this technique aid in the diagnosis and treatment in rare skin/hair human diseases such as Confluent Reticulated Papillomatosis (CRP)? (12).

Further research is warranted.

Figures



Figure 1: Control hair follicle in Anagen. Healthy human scalp hair on glass slide and covered by drop of water. Black Arrow: Depth of focus not showing trapped blood smear. Red Arrow: Pointing at distal end of follicle or Dermal papilla. For details to appreciate Lorentz Forces Magnetic Profiles, as well as multiple biomagnetic loci in follicle and shaft. Please link to:

<https://youtu.be/EcKaTPGzA7Y>

Or Scan QRCode in upper right of image.

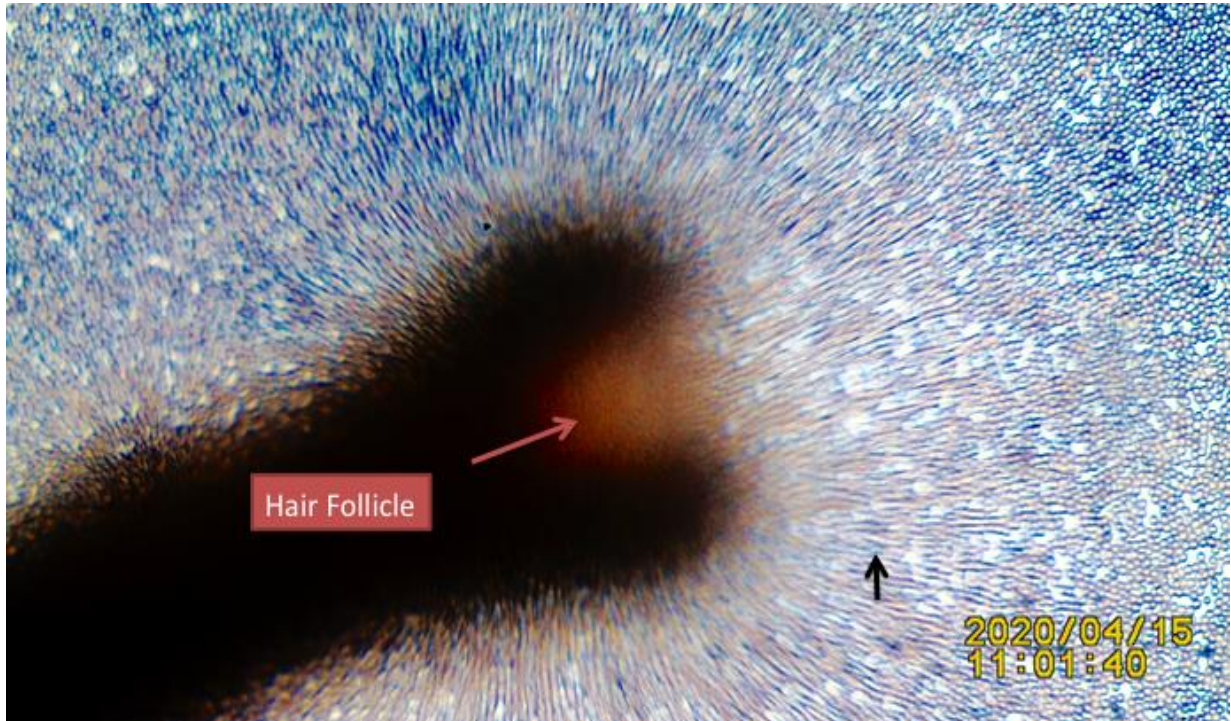


Figure 2: Same hair as in Figure 1 in Anagen showing: Black Arrow pointing at inear Lorentz Forces magnetic profiles showing as straight lines.. Red Arrow= Pointing at Dermal papilla.

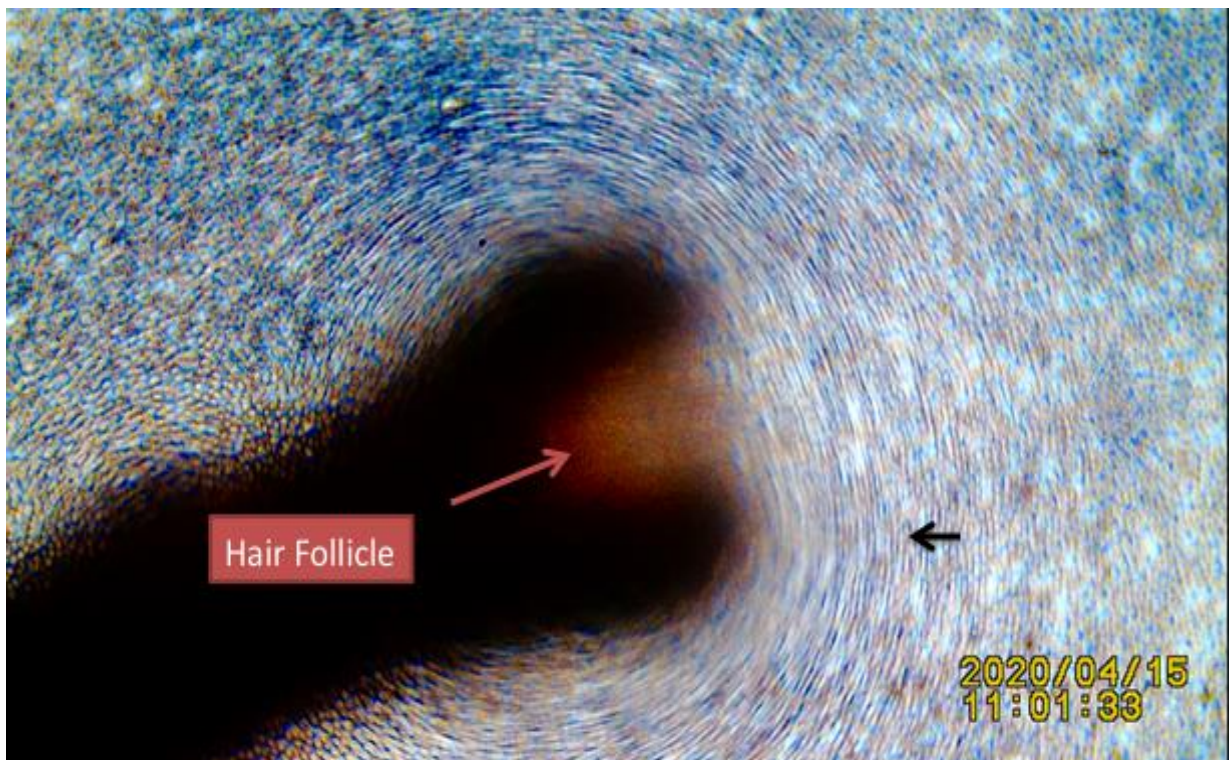


Figure 3: Same hair as in Figure 1 in Anagen showing: Black Arrow pointing at Cyclotron Resonance Magnetic Profiles, showing as curving lines. Red Arrow= Pointing at Dermal papilla.

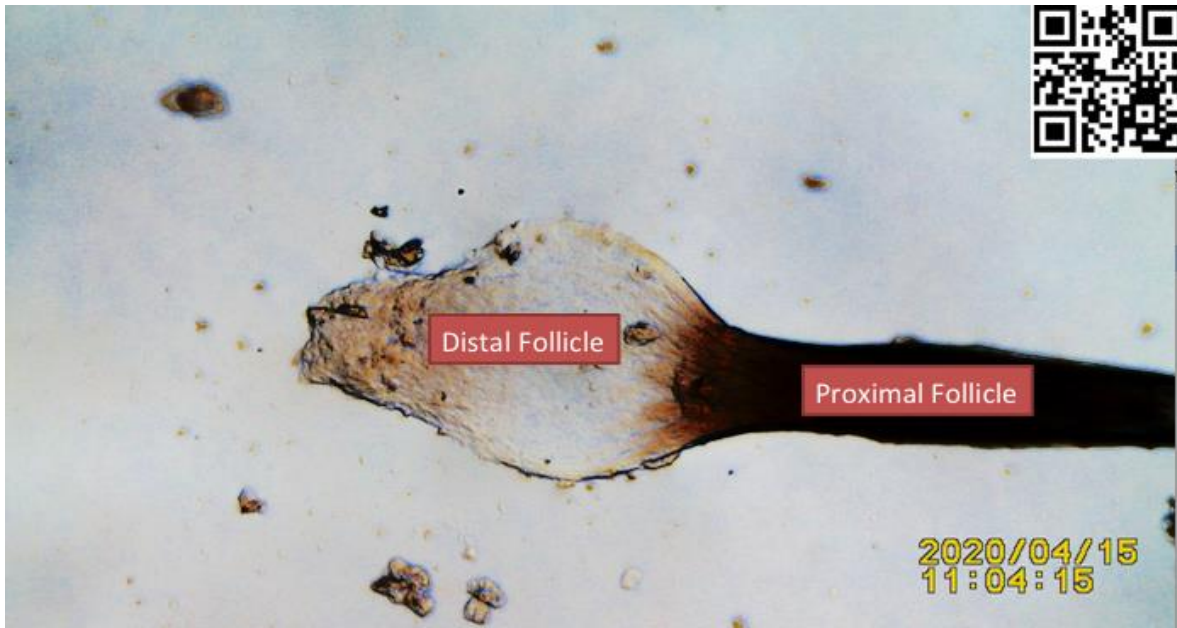


Figure 4: Old shrinking hair follicle in Catagen-Telogen phase- Distal Follicle dying tissue- Proximal Follicle viable tissue.

For additional details link to: <https://youtu.be/C3Zb5W7LwOU> or Scan QRCode in top right of image.

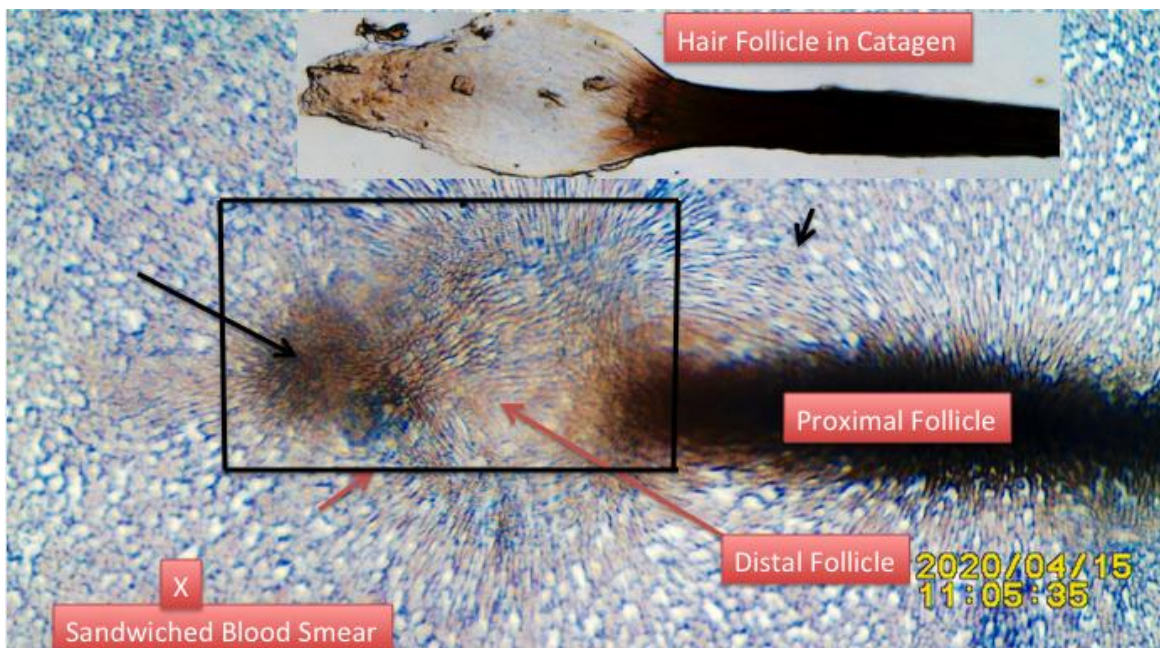


Figure 5: Microphotograph of slide assembly showing hair follicle in Catagen or possibly Telogen. Top of image: Photoshop transposed image from Figure 4 of hair follicle in shrinking stage. Arrows pointing at: Black Arrow: Curving Lorentz Forces interacting with chaotic magnetic profiles from dying tissue. Interaction arising from living cells in proximal follicle. Long Black Arrow: Pointing at Dermal Papilla with residual magnetic profiles. Long Red Arrow: Distal Follicle showing lack of MPs.

Linear Lorentz Forces

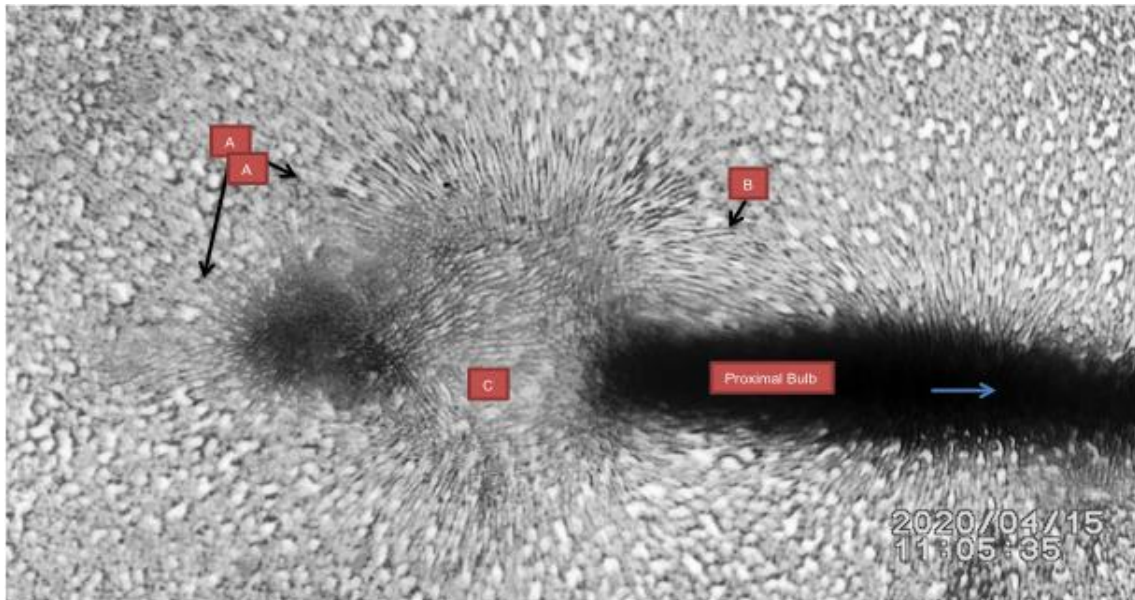


Figure 5A: Photo amplified image of Figure 5. Done in an effort to best appreciate Lorentz Forces lines. A= Linear Lorentz Forces from Dermal Papilla area. B= Curving Lorentz Forces due to proximal-distal follicle interaction. C= Distal Follicle now void of magnetic profiles, showing chaotic linear Lorentz Forces lines in different directions. Blue Arrow= To hair shaft.

Curved Cyclotron Resonance Forces

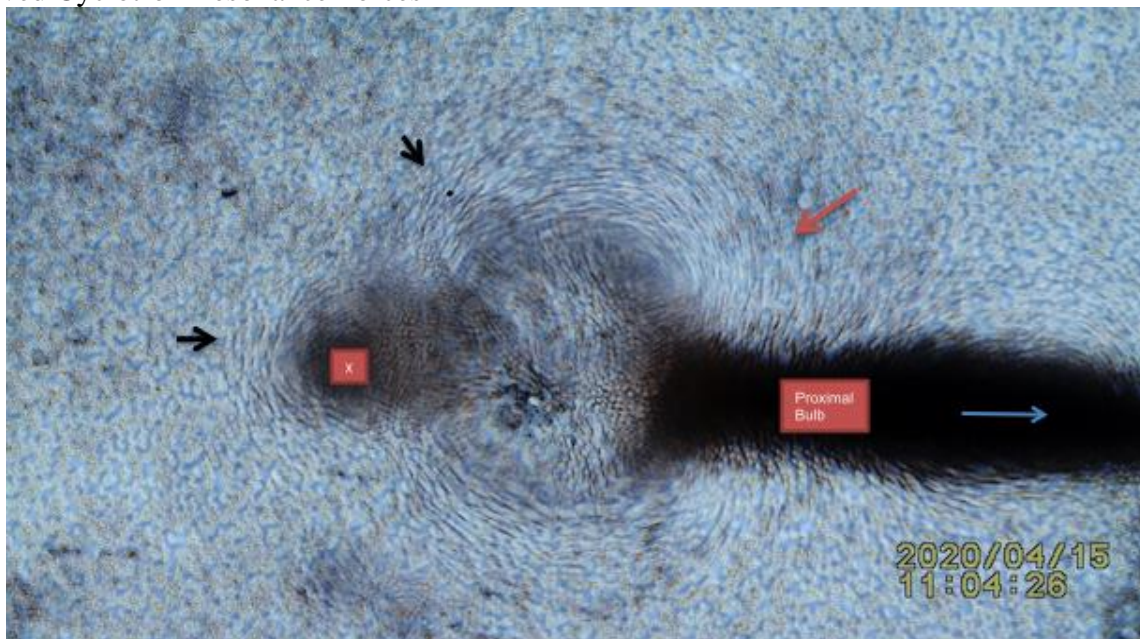


Figure 5B: Photo amplified image of Figure 5. Done in an effort to best appreciate circumferential cyclotron resonance curves. X= Distal Follicle dermal papilla. Short Black Arrows: Pointing at cyclotron resonance profiles. Red Arrow: Pointing at cyclotron resonance curves (Notice absence of curving Lorentz Forces seen in Fig.5A. Blue Arrow: To hair shaft.

Anagen Human Hair Follicle Interacting with Catagen/Telogen Follicle
Notice absence of cyclotron resonance profiles in shrinking hair (F2 in image)

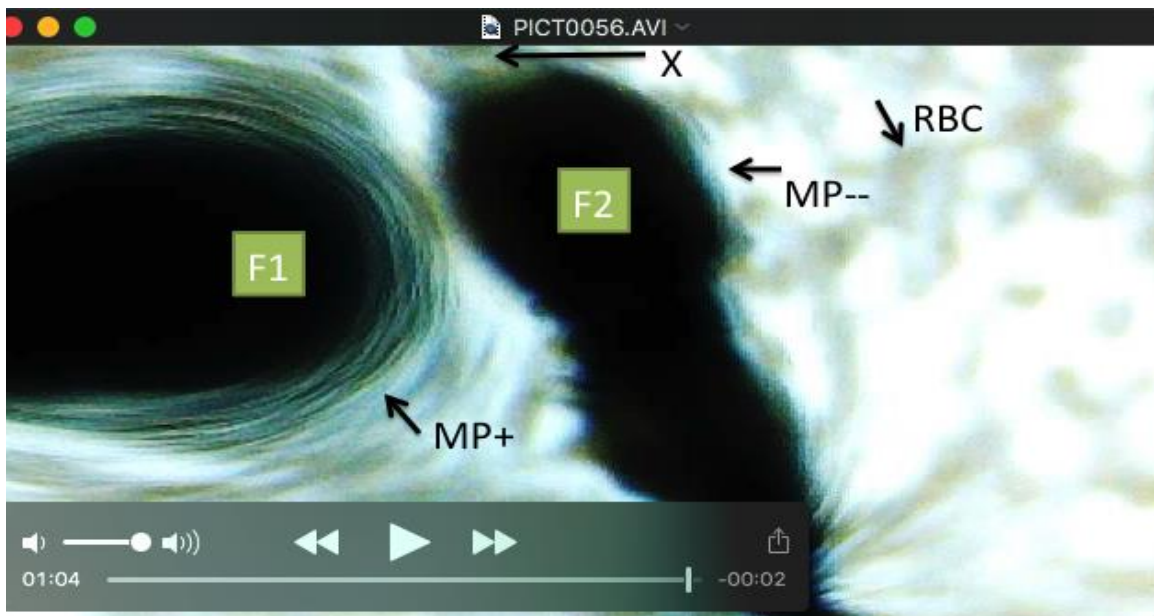


Figure 5C: Unpublished microphotograph from files of video frame of slide assembly showing F1= Hair follicle in Anagen (growth phase) F2= Shrinking hair follicle Catagen/Telogen phase (diminished blood supply) X= Regressing Epithelium. RBC= Out of focus sandwiched red blood cell smear MP+= Positive for Cyclotron Resonance magnetic profiles MP-- = Negative for Cyclotron Resonance magnetic profiles.

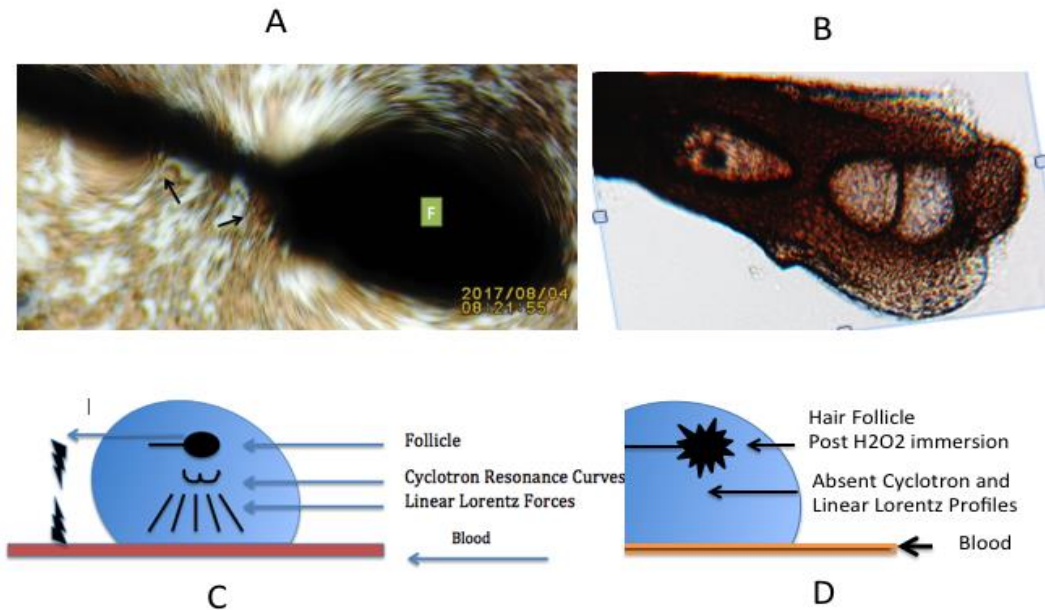


Figure 6: Fronting a normal hair (left) in Anagen with a shrinking hair in Catagen/Telogen. Red Arrows: Pointing at dermal papillae. For additional details on the clashing magnetic profiles please link to:

<https://youtu.be/RYkDz3mbQus> Or Scan QRCode in right upper corner of image.

Supplementary Images

Validation of Magnetic Profiles Technique
 Showing Failure of Dead Follicle to Express Profiles (D below).



S1 Figure 1B: Slide assembly showing A= Fresh Living Hair Follicle. B=Follicle post H2O2 immersion. C= Computer diagram showing slide assembly with live follicle showing MPs D- Computer diagram showing dead follicle and Absence Of MPs.

Image reproduced from: Abraham A Embi Bs. (2018). “INTRODUCING ANTIOXIDANTS AS ESSENTIAL FOR THE MAINTENANCE OF TISSUE LIFE AS DEMONSTRATED IN HUMAN HAIR FOLLICLES.” *International Journal of Research - Granthaalayah*, 6(7), 263-271. <https://doi.org/10.5281/zenodo.1341336>

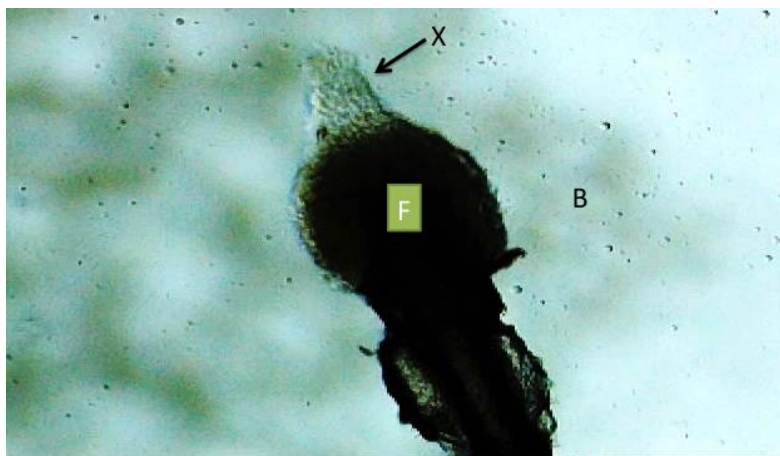


Figure S2. Unpublished microphotograph from files. Control human scalp hair follicle lacking blood supply (in Catagen phase). F= Shrinking Follicle X= Regressing Epithelium B= Sandwiched blood at 1 mm distance. The microscope plane of view was focused on the hair.

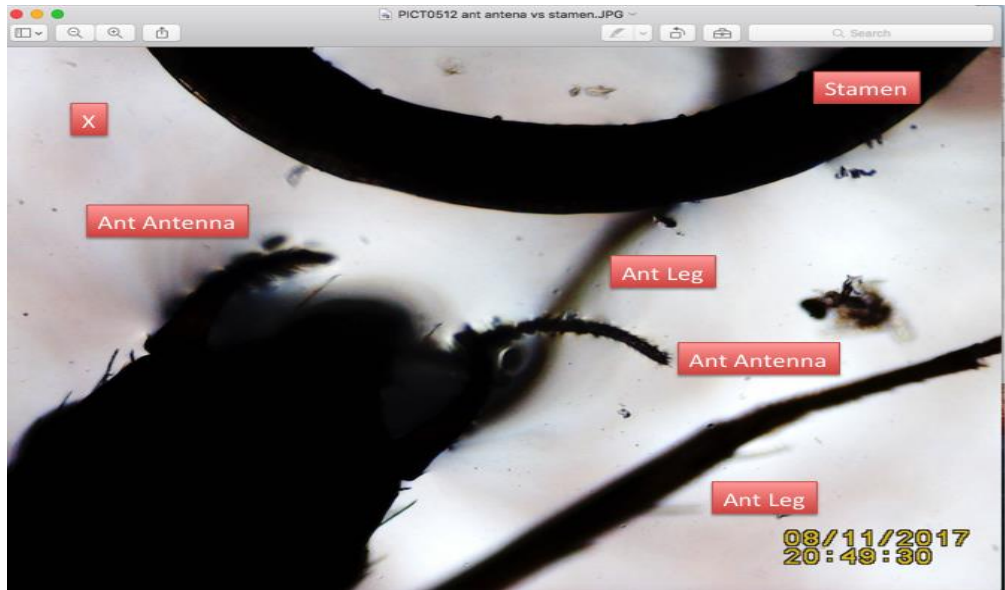


Figure S3: Unpublished image. Ant pollinator near plant stamen (reproductive organ). Control image prior to changing focusing knob to view magnetic profiles.

X= Sandwiched blood drops.

For motion details link to: <https://youtu.be/vuY3yCL3vXM>

Or Scan QRCode of similar experiment.

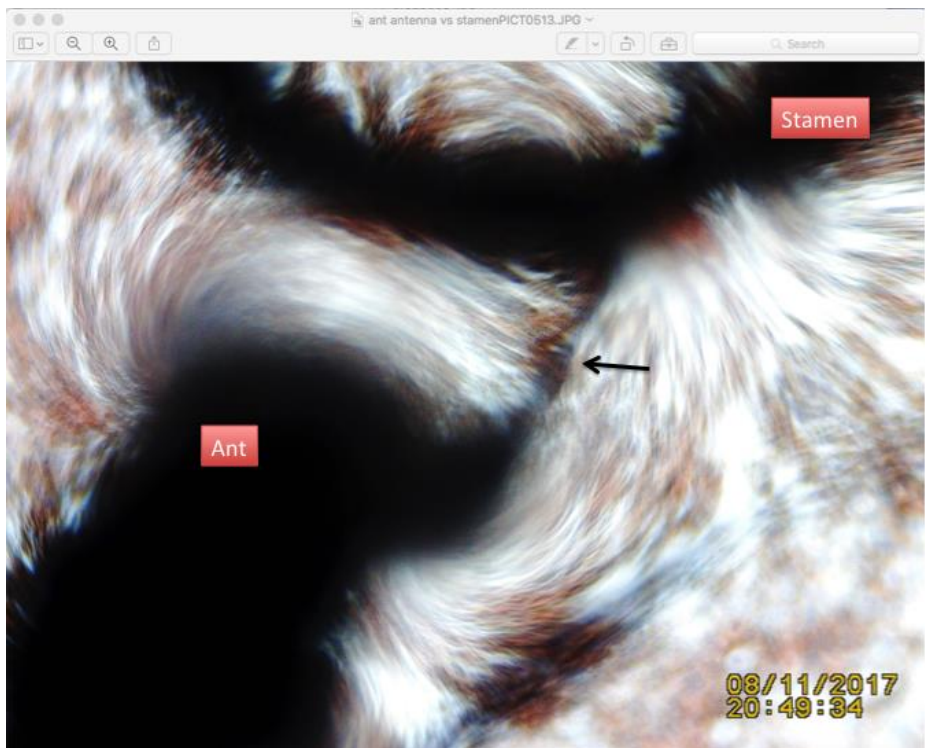


Figure S4: Unpublished image. Post moving depth of focus in slide assembly showing cyclotron resonance curved lines interacting between ant pollinator and rose stamen. Black Arrow= Pointing at out of focus ant antenna.

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