



# DEMONSTRATION OF THE HUMAN HAIR FOLLICLE MAGNETORECEPTION OF BIOMAGNETISM RADIATED BY THE CONCAVE PART OF THE HUMAN HAND



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## ABSTRACT

Biological material has been documented to produce an external magnetic field that radiates out. There have been several papers documenting the magnetic fields produced by steady currents in the body. The most notable was published in 1980 by Cohen et al. where the human hair follicle was used as sentinel and biophysically evaluated via sophisticated equipment such as a double planar Superconducting Quantum Interference Devices (SQUID). Most recently, in 2019 Cohen's work was duplicated by Khan,S by also using double-planar gradiometers. Of interest to this manuscript is that since the introduction of a novel optical microscopy method in 2016 by Scherlag BJ et al is that numerous papers have been introduced in the literature now identifying intrinsic biomagnetic properties of the follicle such as penetration through glass barriers. In this manuscript, a concept of biomagnetic fields by the concave part of the human hand transferring energy to hair follicles is introduced, this was accomplished by using a novel optical microscopy method, in other words, the hair follicle is not limited to radiate out biomagnetism; but also, to receive externally radiated biomagnetic fields from a body part. This magneto receptive property is herein introduced.

## 1. INTRODUCTION

The purpose of this manuscript is to introduce evidence of radiated biomagnetic fields (BMFs) from the concave part of the human hand onto freshly plucked *in toto* scalp hairs (follicles and shaft) placed on a glass slide. Prior research done 40 years ago, demonstrated the prevalence magnetic fields produced by steady currents in the human body; the hair follicles over the head were identified as a reliable source producing reproducible patterns [1],[2]. Recently, with the introduction of an optical microscopy tabletop method [3], inherent electromagnetic energy emanating from isolated human hairs was also documented [4]. Until now, in the human hair follicle and shaft only forward moving source of BMFs emissions have been demonstrated, such as penetrating glass barriers [5]. This manuscript introduces a new finding, which is, which is documentation of air waves transmission of BMFs from an *in vivo* externally placed body part (the human hand) received by a freshly tweezers plucked human hair. Still microphotographs and video recordings are presented documenting the effects of inductive BMFs, shown as an increase in crystals formation adjacent to the follicle and shaft attributed to an increase in energy reception of the

inherent biomagnetic energy present in human hairs. Ferrocyanide crystallization was previously shown to be directly proportional to follicular energy levels [6].

## 2. MATERIALS AND METHODS

### 2.1. MATERIALS

- Potassium Ferrocyanide Trihydrate Granular  $K_4Fe(CN)_6 \cdot 3H_2O$ .
- CSA # 14459-95-1
- Microscope - Glass Slides: 25x75x1mm thickness. Pearl CAT NO. 7101
- Water purity confirmed by hand held electrical fields detector manufactured by Lishtot Detection LTD, Israel. For details link to: <https://www.lishtot.com/TDP1.html>
- Non-contact infrared thermometer Omega Model # 0S425-LS
- Room relative humidity monitored by an ACU-RITE sensor model # 01536-RX.
- Digital Video Microscope Celestron II model # 44341, California, USA.
- Images downloaded to an Apple Computer MacBook Pro Photo Application.

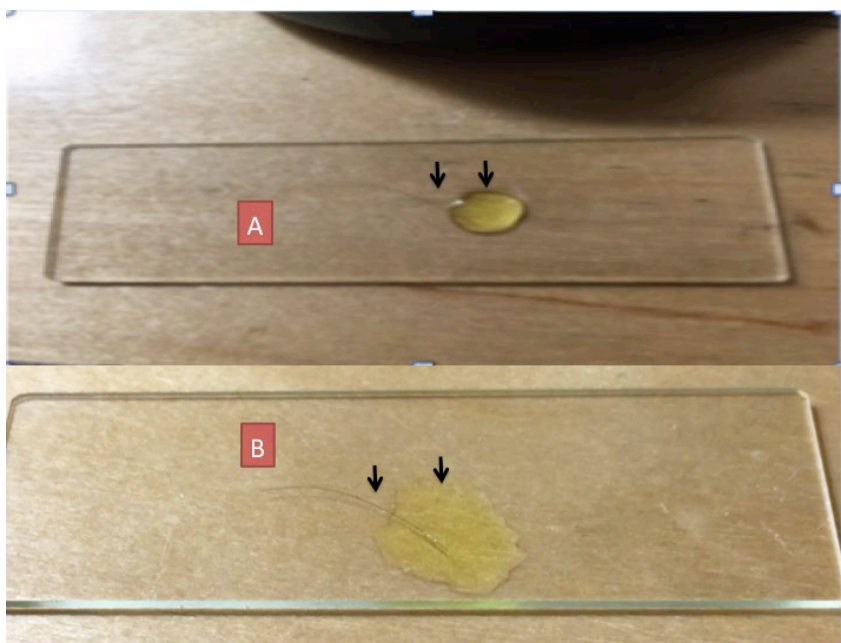
### 2.2. METHODS

#### 2.2.1. PREPARING THE SOLUTION

Commercially available bottled water was tested for impurities via a handheld electrical fields sensor. A solution was prepared by diluting  $\cong 1$  gram of Potassium Ferrocyanide ( $KFe_2$ ) in 1 ml of the previously tested for impurities bottled spring water. The solution placed inside a 6" 4 mm OD glass tube and withdrawn via pipette.

#### 2.2.2. THE SINGLE SIDE PREPARATION (SSP)

The SSP is an open-air technique where freshly plucked *in toto* scalp hairs were placed on a clean 25x75x1mm glass slide; and covered by a drop of  $KFe_2$  in solution; the drop was which was allowed to evaporate. The drop was then touched by a wooden toothpick and dispersed as to cover the follicle and shaft (Figure 1).

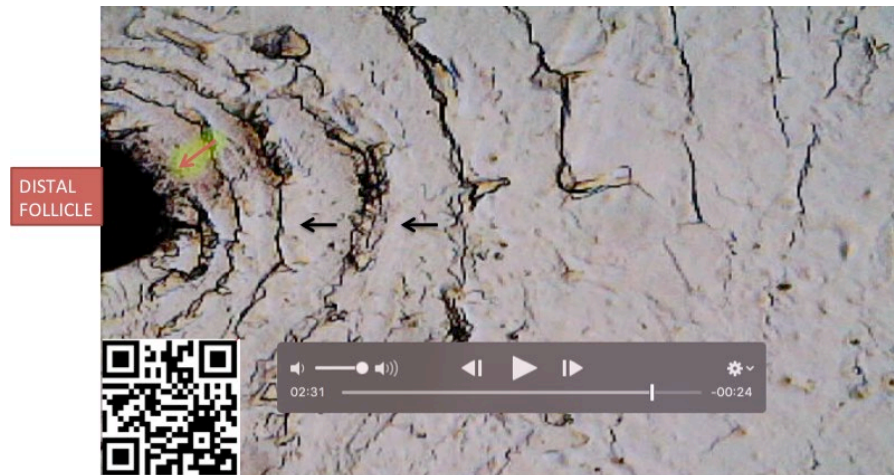


**Figure 1:** **A:** Scalp hair on glass slide covered by drop of  $KFe_2$  (Potassium Ferrocyanide) covering mainly the hair follicle. **B:** Same hair. Now the  $KFe_2$  drop surface tension disturbed via wooden toothpick now covering follicle and shaft.

## Demonstration of The Human Hair Follicle Magnetoreception Of Biomagnetism Radiated by The Concave Part of The Human Hand

### 2.2.3. CONTROL SSP $KFe_2$ EXPERIMENTS

The SSP was allowed to unempidedly evaporate as shown in (Fig 2) below. Microphotographs and video recordings stored for future analysis,



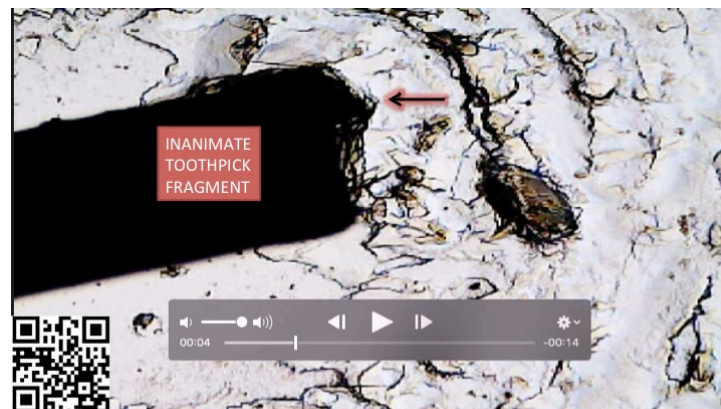
**Figure 2:** Control SSP  $KFe_2$  crystallization pattern when void of external BMFs influence- Black Arrows: Pointing at  $KFe_2$  crystals delineating the follicle diamagnetic property sequentially repelling the diamagnetic ferrocyanide. For details link to: <https://youtu.be/eo6bYwJNIM0>  
Or scan QR Code in lower left corner of image.

### 2.2.4. THE HAND PALM EXPERIMENTS

The left hand was placed over (not touching) the preparation and held in place until the end of crystallization (approximate  $7 \pm 3$  minutes). The room air temperature measured  $81.3^\circ F$ , Relative Humidity 66%, temperature under the palm increased one-degree F during the hand covering maneuver (Fig 4) below.

### 2.2.5. ANCILLARY TEST TO RULE OUT TEMPERATURE AS CONTRIBUTING FACTOR

A small inanimate wood stick fragment was placed on slide for a SSP  $KFe_2$  control experiment. As shown, there is a lack of crystallization accumulating or surrounding the distal part of the inanimate toothpick, thus demonstrating that BMFs inductive energy by the human hand is not the trigger for greater crystallization (Fig 3), in other words increased crystallization surrounding the hair follicle is directly proportional with an increase in metabolism (read energy).



**Figure 3:** Supplemental experiment of hand covering of an inanimate object BMFs effect. Showing inanimate toothpick fragment in SSP  $KFe_2$  after evaporation. Black Arrow: Highlighting lack of crystallization surrounding fragment. Please compare with Figures 7 and 8 below. For details link to: <https://youtu.be/8QYcZHQN8A>  
Or Scan QR Code in left lower corner of image.



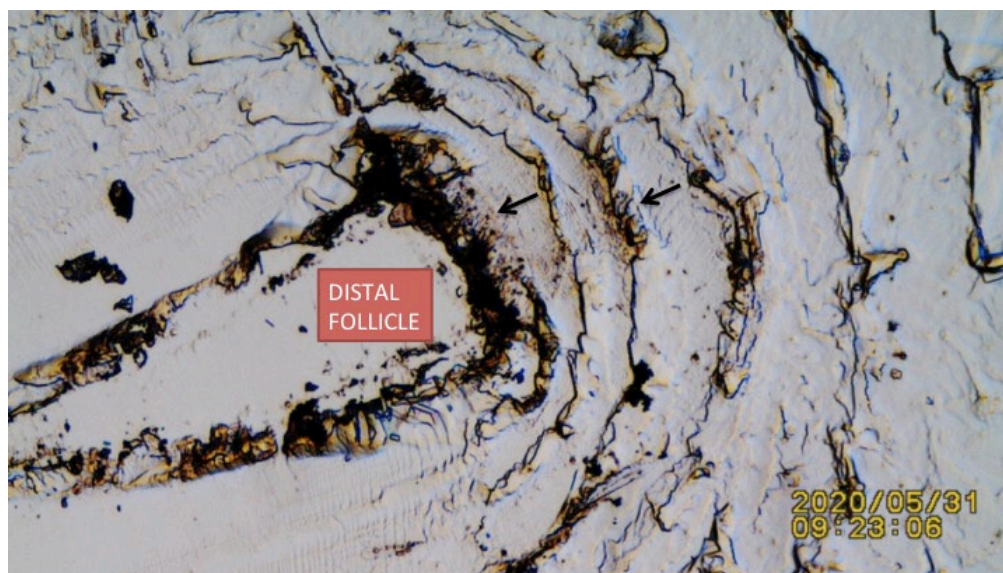


**Figure 4:** Left hand now indirectly covering at  $\approx 1$  cm vertical distance from the wet glass slide with Potassium Ferrocyanide (SSP  $KFe_2$ ) covering the plucked hair. Black Arrow: Pointing at area under the palm of the hand where slide was placed. There is no direct contact between the hand and the slide.

### 3. RESULTS

#### 3.1. DIAMAGNETIC POTASSIUM FERROCYANIDE

Control experiments show a sequential crystallization waves surrounding the proximal hair follicle. This type of response has been documented and published in numerous previous papers; and can be appreciated in Figure 5 below:



**Figure 5:** Same hair as in figure 2. Control hair in SSP  $KFe_2$ . Image at end of crystallization and hair physically removed via toothpick, showing follicle imprint and “normal” crystallization pattern resulting from follicular BMFs.



### 3.2. SSP $KFe_2$ AFTER LEFT HAND PALM PLACEMENT

Opposite to the sequential crystallization patterns observed in the control experiments (Figures 2,3 above); there is now a stark difference in both the pattern and clumping of  $KFe_2$  crystals surrounding the hair follicle. This phenomenon is appreciated in Figures (6,7,8) below.

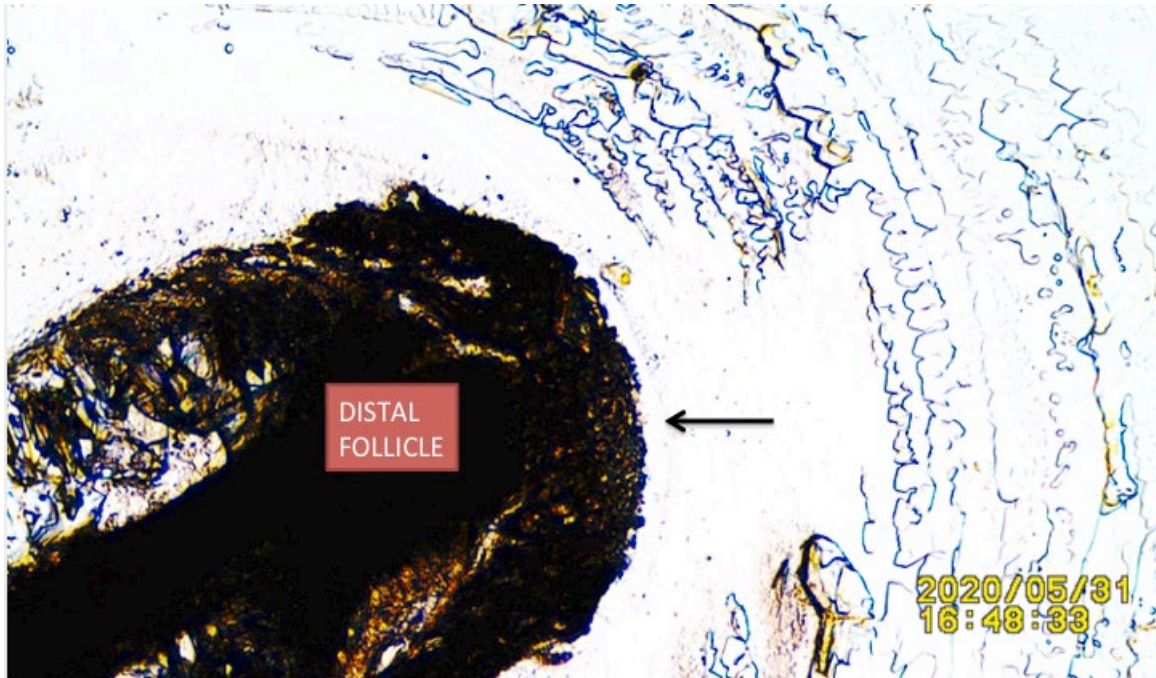
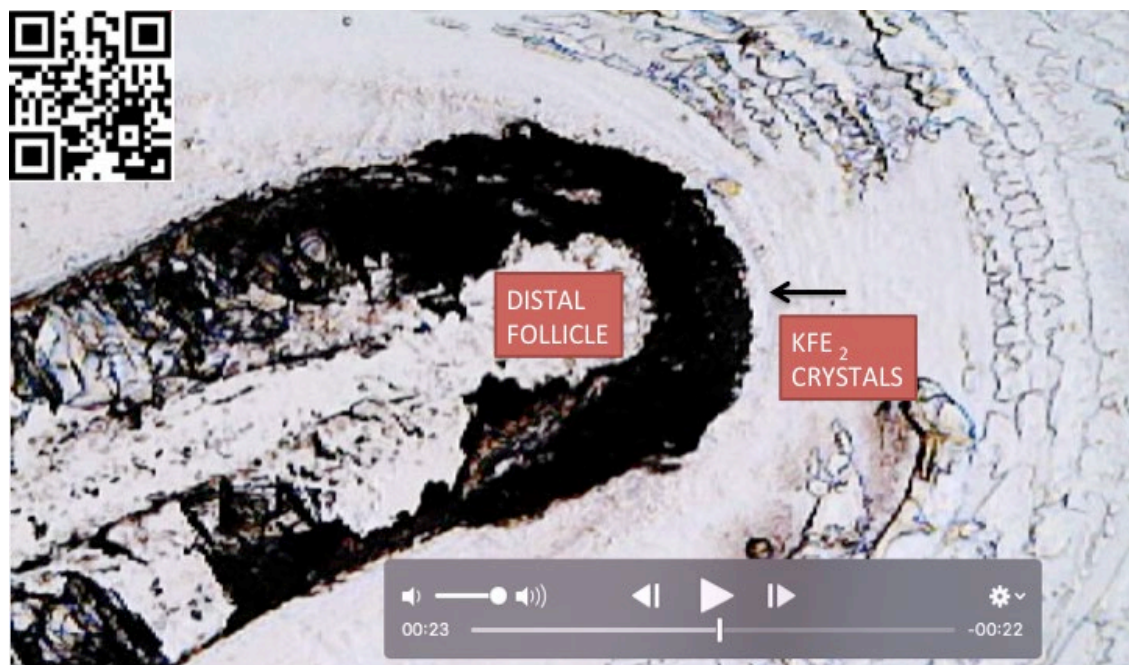
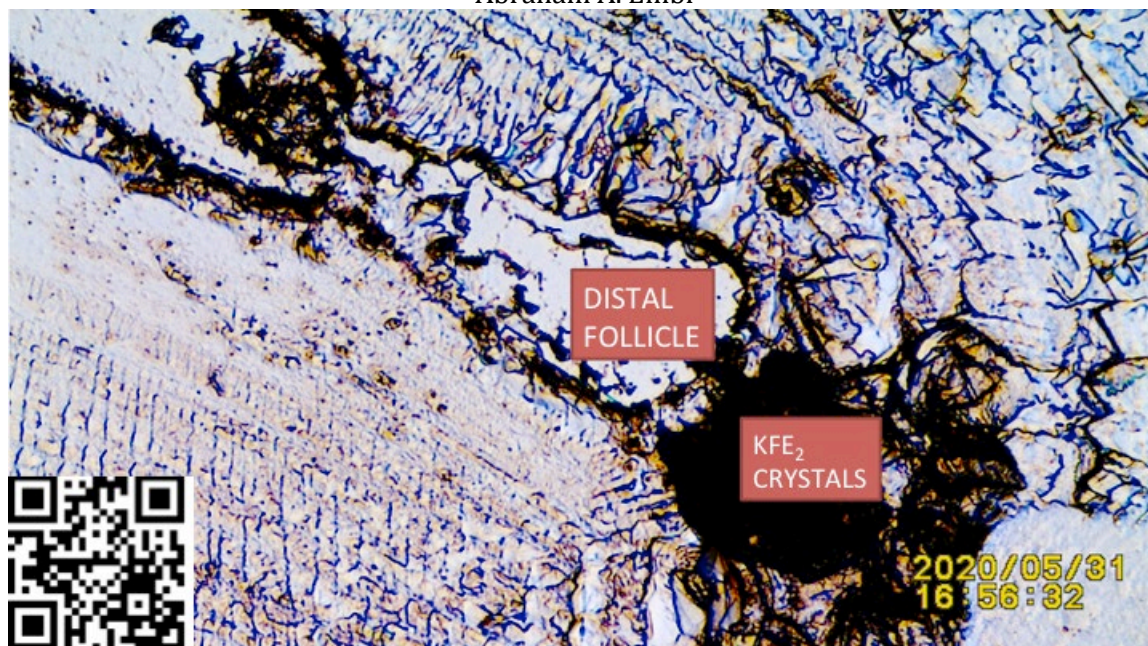


Figure 6



**Figure 7:** Hair follicle in SSP  $KFe_2$  influenced by BMFs from exposure to the indirect hand palm placement throughout the evaporation process. Hair proper removed via toothpick to show increased in crystallization. Black Arrow: Notice stark increase in crystallization surrounding the distal hair follicle as compared with control (Figs 2,4 above).



**Figure 8:** Another human hair imprint in SSP KFe<sub>2</sub> post Hand covering. Video frame Image after hair proper removed to appreciate increased crystallization adhering to follicle. For additional details link to <https://youtu.be/OBQa3mEXYiE> Or Scan with QR Code in lower left side of image.

#### 4. DISCUSSION

Biophysics is the interdisciplinary science that applies physical principles to study biological phenomena; and it has been also described as “The Bridging Science”. Biomagnetism is the branch of Biophysics where magnetic signals are recorded arising from living entities and defined as “the generation of magnetic fields by living organisms. The hair follicle inherent electromagnetic energy had been documented, first by Cohen et al. in 1980 and subsequently by other researchers. Of interest to this manuscript is the property of hair emitted BMFs to penetrate glass barriers. This finding was possible due to an observation linking a trigger in crystallization of KFe<sub>2</sub> in solution within the follicle’s BMFs reach [7].

##### 4.1. INCREASED CRYSTALLIZATION OF KFe<sub>2</sub> BY INCREASED METABOLISM

The observed stark increase in crystallization surrounding the hair follicle is attributed to the aforementioned phenomenon of linking crystallization with biomagnetic energy transfer into the hair follicle. It supports BMFs energy transfer from a human body part to another.

#### SOURCES OF FUNDING

None.

#### CONFLICT OF INTEREST

None.

#### ACKNOWLEDGMENT

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