

# MORPHOLOGICAL TRANSFORMATION OF THE PROTOZOA BLEPHARISMA BY FREQUENCY SPECIFIC AMPLITUDE MODULATED RF PULSED PLASMAS

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Anthony G. Holland

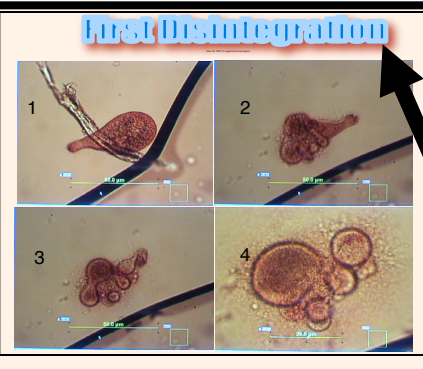
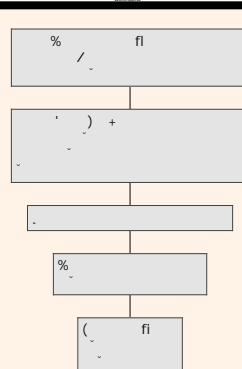
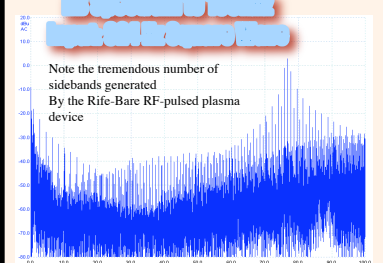
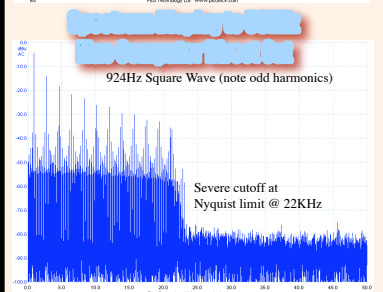
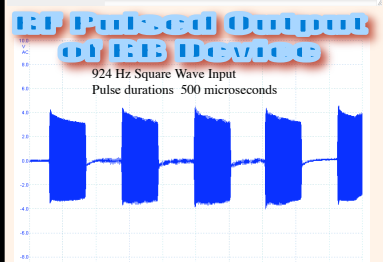
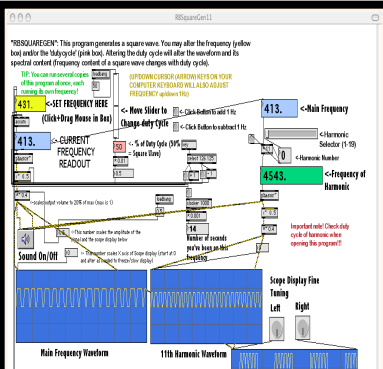
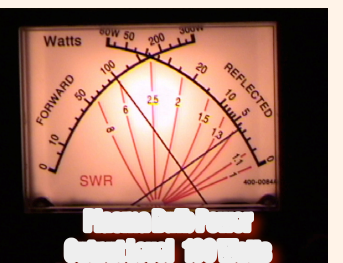
Department of Music, Skidmore College, Saratoga Springs, NY 12866

## Introduction

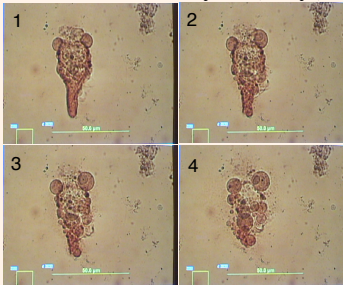
**Summary of Abstract:** The protozoa *Blepharisma* can undergo dramatic and disruptive morphological transformations caused by frequency-specific, low power, pulsed, amplitude modulated radio frequency (RF) fields utilizing an enclosed gas plasma antenna.

## Objectives

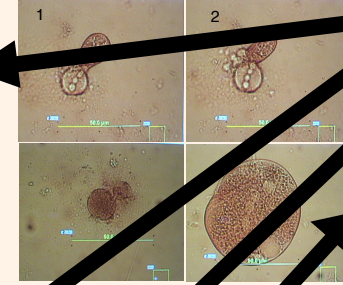
**Proof-of-concept experiments** demonstrating that frequency specific, low-power, pulsed, amplitude modulated (AM) radio frequency (RF) fields utilizing an enclosed gas plasma antenna, can have dramatic disruptive effects on some biological organisms. Specific harmonic and dissonant tonal relationships between input frequencies in AM RF pulses are explored and correlations are drawn between these relationships and the level of biological effects. The biological effects are photographed and video taped.



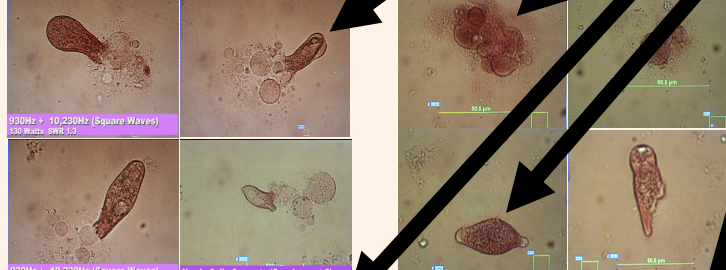
Progressive disintegration of a single organism into numerous membranous spheroids (time lapse)



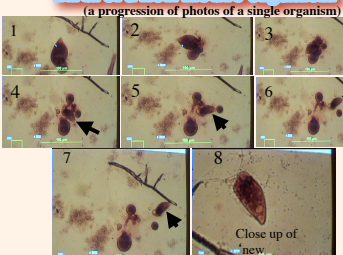
Disintegration with 'Pearl-Chain' Effect (photo 1 & 2)



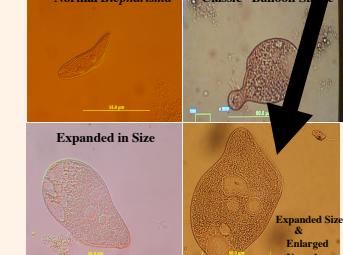
Different Blepharisma exhibiting unusual morphologies



Early Signs of Effects of the RB Device (a progression of photos of a single organism)



Early Signs of Effects of the RB Device



## Conclusions

The protozoa *Blepharisma* can undergo dramatic and disruptive morphological transformations caused by frequency specific, low power, pulsed, amplitude modulated radio frequency (RF) fields utilizing an enclosed gas plasma antenna. Five different types of changes in organisms have been documented. Biological effects seem to be most pronounced when two or three simultaneous and harmonically related square wave frequencies are used as input controls for the AM with the index of modulation exceeding 1 within the RF transmitter, resulting in a pulsed RF output which contains a wideband spectrum reaching as high as 150Mhz. Spectrum analysis shows that harmonically related audio range square waves can create a greater spectral energy density at specific locations in the frequency domain, serving to group sidebands into focused areas of greater spectral intensity and this correlates with the biological effects documented. Waveform analysis reveals that a correlation may exist between the biological effects, the number of RF pulses per second and the shape of pulse amplitude envelopes.

## Results

- Five primary effects have been documented:
1. Complete disintegration of an organism, the remnants of which often assemble spontaneously into numerous round membranous structures (spheroids).
  2. Post-disintegration fusion of these negatively charged membranous spheroids, overcoming any natural repelling of like charges.
  3. Partial disintegration of an organism during which a remnant of the organism seals itself off, retaining motile cilia, and survives autonomously following the experiment (birth of a new organism?).
  4. Partial disintegration of an organism forming some membranous spheroids but leaving some of the organism intact but apparently nonfunctional.
  5. General size expansion and distortion of the organism's shape accompanied by dissolution of internal structures (vacuoles etc.) and general loss of motility, often ending in elimination of all cilia action.

## References

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## For further information

Please contact [holland@skidmore.edu](mailto:holland@skidmore.edu)  
More information on this and related projects, including online videos of these experiments can be obtained at:  
[www.skidmore.edu/academics/music/aholland/PlasmaTwo.htm](http://www.skidmore.edu/academics/music/aholland/PlasmaTwo.htm)