EDITORIAL

Editorial

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THE ALL RESULTS JOURNALS

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Editorial

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Dear readers of the *All Results Journals:Biol,*

We are pleased to introduce to you *The All Results Journals: Biol* (All Res. J. Biol), a very unique journal that publishes articles and reviews with negative results in the field of Biology. This journal represents the first total open access source for research concerning negative results and will be a valuable resource for researchers all over the world; experts and those new to the field alike.

Our immediate goal is to provide scientists with responsible and balanced information in order to advance faster, improve experimental designs and clinical decisions. Many journals skew towards only publishing "positive" data; that is, data that successfully proves a hypothesis. *The All Results Journals: Biol* is the home for negative or "secondary" data: experimental documentation of hypotheses that turn out not to be true, or other experiments that do not lead to an advance of a specific hypothesis but are, nevertheless, a true rendering of that experiment. For example, if a researcher set up a cell-based experiment and the experiment did not work in a particular set of conditions, it would be very useful for other researchers to know this (to avoid time and money wasting and better planning).

There is a huge untapped resource of experimental data locked up in laboratory notebooks that could be of great service to the scientific community at large. Many experiments fail to produce results or expected discoveries. This high percentage of 'failed' research can still generate high quality knowledge. The main objective of *The All Results Journals: Biol* is to recover and publish these valuable pieces of scientific information.

As we publish negative results, the newer generation of researchers will not waste their time and money repeating the same studies and finding the same results (negative in this case). We believe that negative results are high-level pieces of knowledge that deserves to be published.

The All Results Journals: Biol is a peer reviewed journal developed to publish original, innovative and novel research articles resulting in negative results. This peer-reviewed scientific journal publishes theoretical and empirical papers that report negative findings and research failures in Biology and related fields. Submissions should have a negative focus; experiments that yield negative results will be given more preference.

All theoretical and methodological perspectives are welcomed. We also encourage the submission of short papers/communications presenting counter-examples to usually accepted conjectures or to published papers.

Negative results in Biology

Biology is a natural science concerned with the study of life and living organisms, including their structure, function, growth, origin, evolution, distribution, and taxonomy. Biology is a vast subject containing many subdivisions, topics, and disciplines. It seems with our ever increasing ability to dissect biological systems to finer detail, simplicity of explanation becomes more elusive. With this in mind, *The All Results Journals* serves as a platform and resource for your important negative observations that stand the test of rigorous scientific scrutiny and methodology in the complex fields of biology. Data collected under exceptional experimental design that may not support a convention in a given area of research should and can be reported. Negative results shape the development of effective therapeutic agents, help us understand what cell types are critical for autoimmune pathogenesis and redefine the molecular targets of a drug. These data serve to drive the scientific method forward by showing the path not to follow.

As scientists we strive for remarkable observations within biological systems that will further expand our understanding of the human condition, aging, cancer, autoimmunity, etc. At the *All Results Journal* we know how science gets done; sometimes the pieces just don't add up. These negative results drive our next step at the bench but are rarely published. We are working to bring to light these types of observations to be published under peer review for the greater good. Our goal is to make accessible a manuscript about what didn't work so you can build on the mistakes of others rather than simply repeat them. Instead of three steps forward and two steps

back, Science could just move forward. We now have an unbiased forum to present a negative finding.

In Cancer research or chemotherapeutic development, for example, the trend is to publish data showing efficacy. We'd offer that inefficacy could also be of great importance to the scientific community. What agents failed, in what types of cancer and why; the latter question albeit difficult to answer. One could imagine the same trends emerging from this type of work in terms of gene expression profiling, proteomics and biomarkers. Agent X will not be effective in cancer Y because of overexpression of biomarker Z. A manuscript focused on the inefficacy of a particular chemotherapeutic agent could assist in moving the cancer biology field forward by offering a forum to share with the greater cancer research community the same negative findings that may have contributed to the development of a highly effective agent.

Breaking this cycle of publishing only positive results will undoubtedly improve our ability to make educated decisions at the bench in biology. Furthermore, there are many research based scientific disciplines that would benefit from bringing this important work to the mainstream of scientific publication and peer review. This trend (resistance to publish negative results or unsuccessful experiments) has been recently defined as "publication bias" and has major ramifications for the health of citizens. Publication bias is a growing problem and some authors are now extensively writing about it. [1]

Not only Health but also Ecology has shown this publication bias and have been widely discussed by different authors in recent years.[2-5] Generally, results that either fail to reject a null hypothesis or do not accord with the current consensus are often not published, which may lead to a biased representation of natural processes.[6] Although it is believed that publication and dissemination bias is less pronounced in Ecology than Medicine,[3, 4] there is the same resistance among the authors of several fields to submit their negative results. This problem does exist in Ecology and others sub-fields of Biology (Botany, Biochemistry, Genetics, etc.) and is probably accentuated by the lack of a venue for publishing negative results like *The All Results Journals: Biol.*

Contradictions of current expectations can also suffer bias. This trend might be perpetuated by the attitude of researchers who have deliberately hidden negative results or by the ones who neglected or forgot about results entirely (mainly due to lack of time). Large research groups might continue with other experiments without stopping, analysing or reporting negative results. In these cases, the authors contribute to a growing problem because they consider those results to be less interesting and important than they actually are.[3] It may contribute to biases in meta-analytical studies due to negative results being less accessible to the wider scientific community.

Another important type of publication bias in Ecology (as in other sub-fields) arises from replication. Biological systems are difficult and costly to replicate under natural conditions (i.e. natural variables are very heterogeneous in space and time) and replicate studies often reveal nothing new and/or produce negative results.[5] *The All Results Journals: Biol* can help to fight the publication bias problem in Biology (and its sub-fields) first, providing an excellent way for negative results (non-significant, contradict current expectations, lack of replication, etc.) publication and second, contributing to increase the negative results' knowledge for scientific progress. Additionally, researchers must overcome their self-imposed barriers to the publication of negative results and give them the attention they deserve.

In this issue

In this first issue we feature an updated review on malaria, highlighting some negative results obtained in treatments. The paper highlights the plasmodium genes of interest playing a role in resistance to first line therapies such as chloroquine and sulfadoxine-pyrimethanine. The respective mode of action of these and other second generation compounds are discussed and presented as the next line of combination therapies that will hopefully overwhelm resistance genes. The authors provide the scope and history of antimalarial drug development as well as the problems facing implementation of drug regimens, diagnosis and follow-up statistics of patients. At the heart of this review is the failure and limitations of some of the most recently developed anti-malarial agents at various stages of clinical development. Therein the authors review shortcomings in study design germane to current non-human primate models available. They go on to discuss the biochemical rationale of the various agents and offset this with potential side effects of the drugs. The subject matter at hand, namely the difficulties with development of an effective antimalarial agent and achieving clinical success are in the spirit of the All Results Journal.

The second article describes the negative results obtained when testing a new protecting ischemic stroke drug. Thromboembolic occlusion of intracerebral vessels is responsible for the majority of ischemic strokes. The intrinsic pathway for thrombus formation is initiated when coagulation factor XII (FXII) becomes activated on a negatively charged surface followed by successive activation of factor XI (FXI) and factor IX (FIX). It has been shown that FXII-deficient mice were protected from pathological thrombus formation so the use of FXII inhibitors would be associated with relatively low rates of therapy-related hemorrhages, the major clinical complication associated with current anticoagulant therapies. The authors tested the new chemical COU254, a 3-carboxamide-coumarine that selectively inhibits FXIIa, in a rodent model. The authors found no differences between controls and mice treated with COU254 when they induced cerebral ischemia. In addition, they didn't find any significant

differences in infarct volumes in both groups. Furthermore, analysis of the neurological status in both groups did not reveal any beneficial effects of COU254 in acute ischemic stroke or any differences in thrombus formation. The authors pointed out some reasons why these negative results were obtained like optimum dosage or correct timing of drug administration after ischemic stroke induction. We agree with the authors that further preclinical evaluation is needed. This negative result opens the door to new antithrombotic drug improvements.

Epilogue

We strongly believe that the total Open Access format of the new journal has clear benefits for science, medicine and the general public: First, all articles are freely and universally accessible online, and so an author's work can be read by anyone at no cost. The easy and widespread availability of articles significantly enhances reading and citation of the results. Second, all accepted articles are immediately published with no delay and therefore, allow particularly rapid dissemination of new results. Third, *The All Results Journals: Biol.* allows interactive discussion and annotation of articles providing an online tool for open discussion of data. Fourth, there is no size restriction for articles and no publication charges to authors. Authors hold copyright for their work and grant anyone the right to reproduce and disseminate the article, provided that it is correctly cited.

There is an ethical imperative and a significant challenge to ensure that finite research resources are better used, avoiding replication of previous experiments leading to an optimization on the use of resources. *The All Results Journals: Biol* is tackling that challenge, providing to scientists a new tool for publishing their negative results. We invite you to dig into your file drawer or hard drive for the negative results and submit them to *The All Results Journals: Biol.* All results are good results.

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