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Development of an Applied Academic Research Institute by a Group of Researchers from Various Disciplines, with the Overarching Goal of Advancing Science in a Peripheral Region

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Abstract

This study examines the development of MIGAL-Galilee Research Institute, as a model for the development of applied academic research in a peripheral region. It details how a multidisciplinary group of researchers operating within the framework of a regional economic development company created from 1985 to 2010 a research infrastructure that promoted scientific innovation, academic collaboration, and regional development. The internal academic organization, led by an independent Academic Council, facilitated scientific excellence and the growth of Tel-Hai Academic College. Through this collaboration, a Faculty of Science and Technology was established, offering degrees in food sciences, biotechnology, nutrition, and environmental sciences. Analyses using ResearchGate and Google Scholar show that MIGAL and Tel-Hai researchers performed at levels comparable to peers at major Israeli universities. MIGAL's dual governance model enabled sustainable scientific leadership in a peripheral region and illustrates how regional academic institutes can decentralize innovation and support equitable development.

Keywords

Peripheral Development, Academic Research Institute, MIGAL, Tel-Hai Academic College, Multidisciplinary Research, Regional Innovation, Faculty Evaluation

1. Introduction

The strategic establishment of academic research institutions in peripheral areas

has been acknowledged as a powerful catalyst for regional development [1]. Such institutions contribute to innovation, education, and regional economic and social resilience [2] [3]. MIGAL-Galilee Research Institute, located in Israel's northern periphery, exemplifies how multidisciplinary research centers can integrate scientific infrastructure with local development. The synergy between academia, industry, and government, fostered through collaborative networks, supports inclusive growth. Moreover, higher education investments in remote regions help decentralize national innovation systems and reduce spatial inequality [4].

2. Scientific Leadership and Organizational Structure at MIGAL (1985-2010)

2.1. MIGAL's Internal Structure and Role within the Galilee Development Company

The Academic Council at the center of MIGAL governed all research activities (Figure 1). On the academic side were infrastructure-funded research groups and additional researchers under academic oversight. Supporting committees included the Scholarship and Ethics Committees. Administratively, the Galilee Development Company oversaw MIGAL's public and operational administrations. This dual structure enabled simultaneous academic and regional development objectives [4].

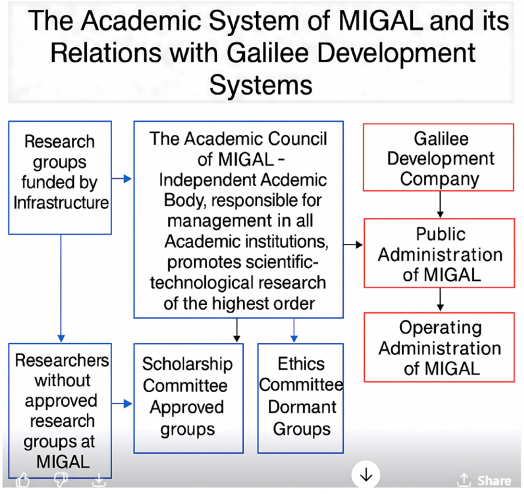

Figure 1. The academic and administrative structure of MIGAL and its relationship with the Galilee Development Company.

2.2. Establishment of the Faculty of Science and Technology at Tel-Hai College

The Academic Council at MIGAL, based on initiatives of MIGAL's researchers, initiated the creation of a School of Sciences, at Tel-Hai College. Later it developed into the Faculty of Science and Technology, at Tel-Hai College (Figure 2). This faculty included departments of Food Sciences, Biotechnology, Environmental Sciences, and Nutrition. Most of these faculty members also held research posi-

tions at MIGAL, facilitating strong teaching-research integration. It is important to note that no research takes place at this type of colleges in Israel. The special unique combination between MIGAL and Tel-Hai College has allowed college faculty members to engage in research [4].

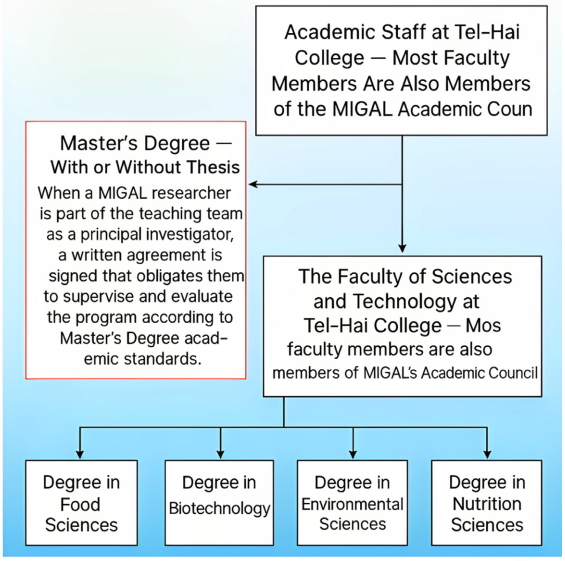

Figure 2. The academic structure of the Faculty of Sciences at Tel-Hai College, founded and regulated by MIGAL's Academic Council.

2.3. Integration of Researchers with Graduate Programs

A working policy emerged wherein MIGAL served as the research arm of the Faculty of Science and Technology at Tel-Hai College. MIGAL provided research infrastructure to faculty members, ensuring institutional collaboration without duplicating infrastructure in the region. The existence of research laboratories at MIGAL for faculty members/researchers has made it possible to train master's degree students at the college (Figure 3).

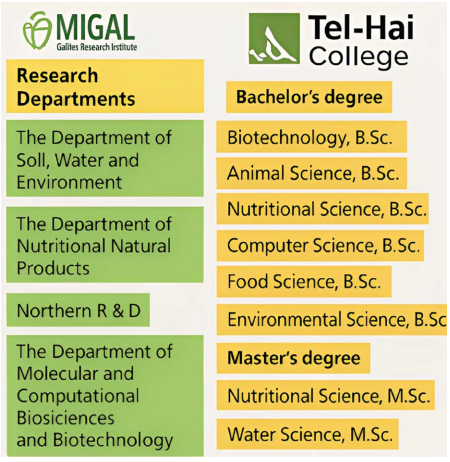

Figure 3. Composition of MIGAL research staff integrating with the B.Sc. and M.Sc. faculty programs at Tel-Hai College.

Evaluation and promotion of academic ranks at MIGAL aligned with national academic standards, recognizing ranks conferred by Israeli universities and governmental research institutions [5] [6].

3. Research Evaluation and Productivity (1985-2010)

The researcher's academic productivity was assessed using data from ResearchGate (RG) and Google Scholar (GS) (Figure 4).

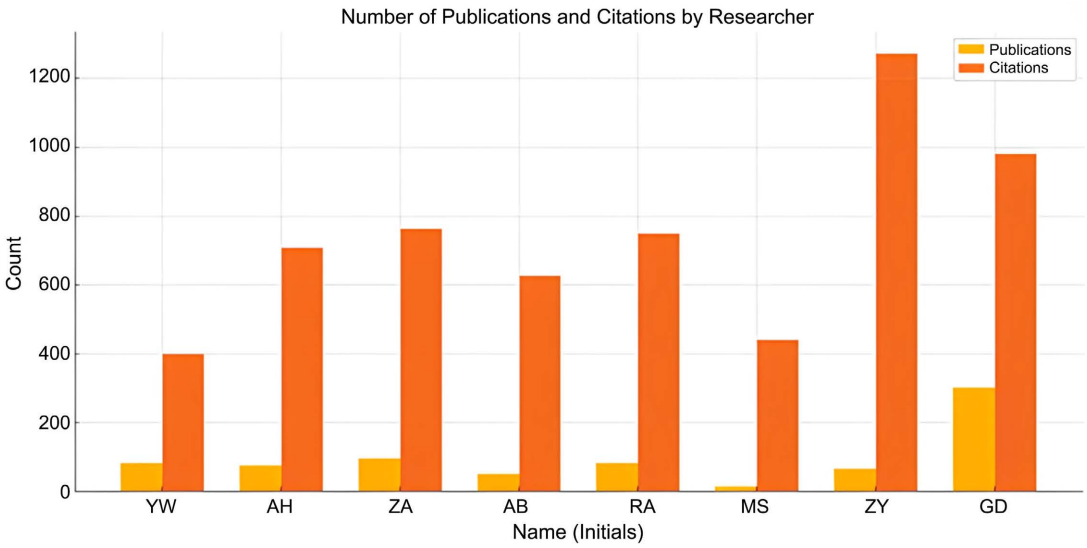

Figure 4. Comparison of animal science professors—ResearchGate.

Significant differences appeared in RG metrics ($p < 0.05$) between environmental science and medical science (Figure 5 vs. Figure 6). Tel-Hai/MIGAL professors performed similarly to peers elsewhere, with mixed higher/lower values across disciplines.

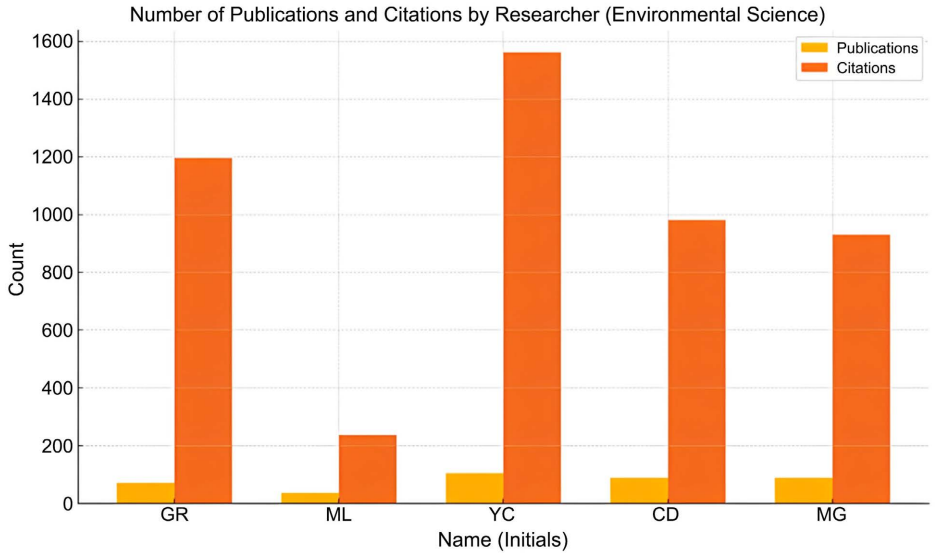

Figure 5. Comparison of environmental sciences professors—ResearchGate.

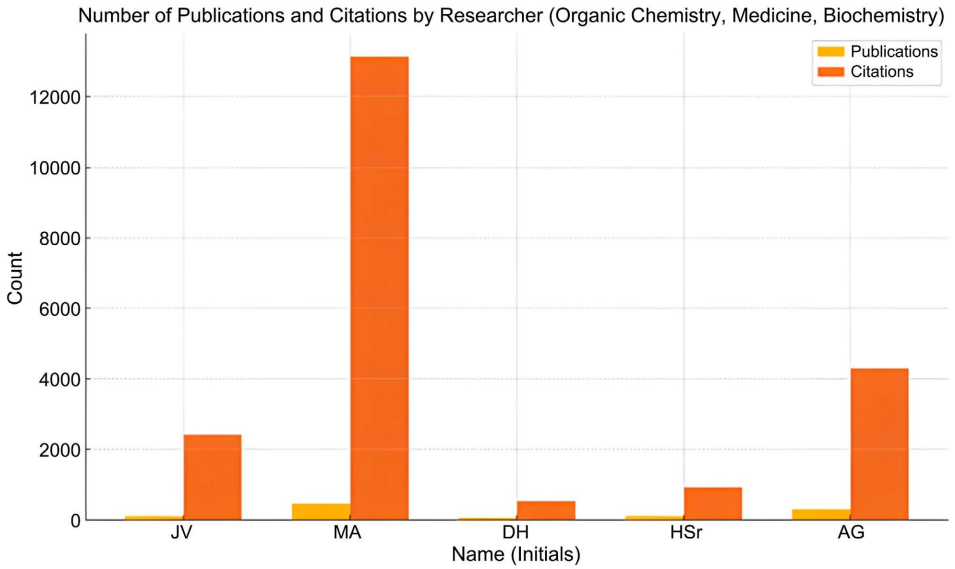

Figure 6. Comparison of organic chemistry, medicine, biochemistry professors—ResearchGate.

In general, differences were found between RG and GS metrics, particularly in citation counts. GS identified standout researchers in each discipline, but overall patterns were like RG findings.

4. Conclusions and Implications

The above-mentioned data support the hypothesis that integrating teaching at Tel-Hai Collage with research at MIGAL-Galilee Research Institute, enabled high academic performance, without reducing productivity (see Figures 4-8 and Table 1). This is a proof of that the academic structure at MIGAL-Tel Hai in place between 1985-2010 was effective. Transparent evaluation using online tools supports international comparison and affirms the model's replicability.

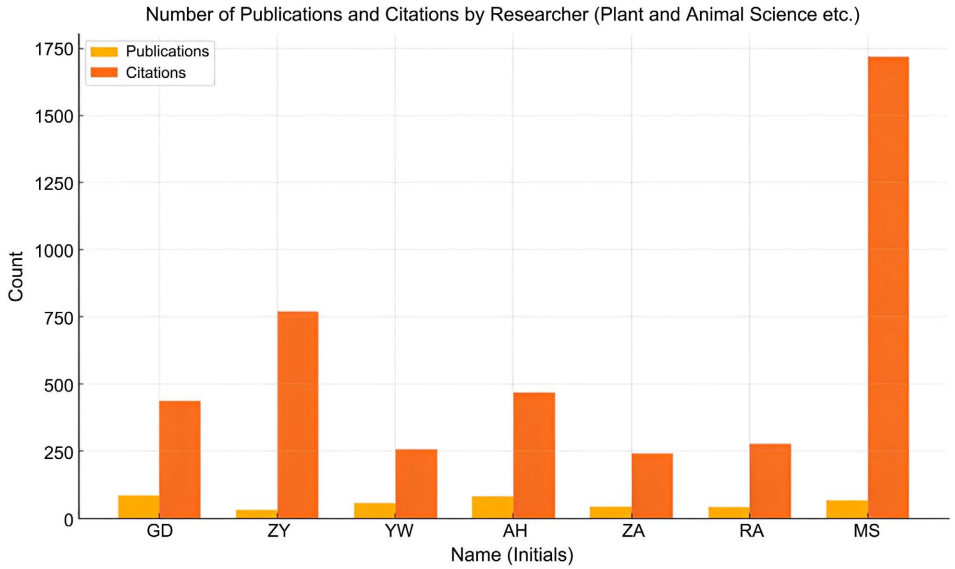

Figure 7. Comparison of plant and Animal science professors—Google Scholar.

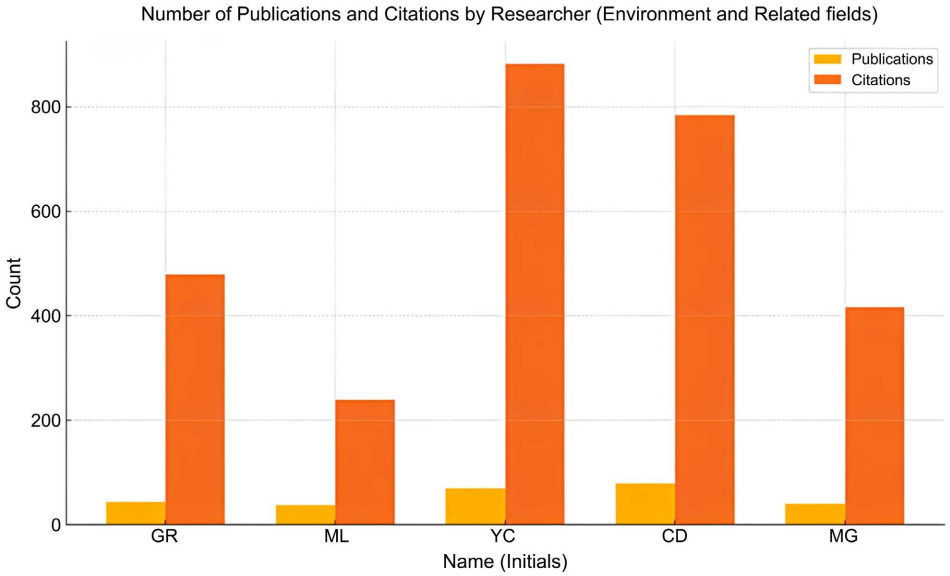

Figure 8. Comparison of environmental science professors—Google Scholar.

Table 1. Comparison of organic chemistry and medicine professors by Google Scholar.

Name	University	Fields of Study	No. of Publications	Citations
JV	Tel-Hai, MIGAL	Biochemistry, Neuroscience, Molecular Biology	44	818
MA	Technion—Israel Institute of Technology	Biophysics, Nutrition, Biochemistry	288	5800
HS	Tel Aviv University	Genetics & Genealogy, Immunology	23	242
AG	Ben Gurion University of the Negev	Biochemistry, Endocrinology	161	1606
Average			129	2116.5
SD			122.1	2518.5

5. Academic Structure and Faculty Support

At MIGAL, the role of a Principal Investigator (PI) is defined by a combination of academic leadership and institutional responsibilities. Each PI is required to lead an independent research group and hold an academic appointment at Tel-Hai College. In addition, PIs are expected to supervise M.Sc. and Ph.D. students, actively apply for competitive grants, and participate in both academic and administrative functions within the institution.

The funding structure for PIs at MIGAL reflects a balanced model: 50% of the budget is allocated for teaching responsibilities, 25% for student supervision, and 25% is covered directly by MIGAL's internal budget. This structure enables researchers to maintain active research programs while contributing to the educational and administrative missions of the affiliated academic institution.

An illustrative example is Prof. Gad Degani, who secures funding through a diverse portfolio, including competitive research grants and national fellowships. His laboratory's average annual research expenditure is approximately 40,000 NIS, supporting both operational costs and student training activities.

6. Role and Selection of the Scientific Director of MIGAL

The Scientific Director of MIGAL is selected from among the institute's senior researchers who have demonstrated prior experience in academic leadership and institutional management. This position entails a central role in shaping the scientific agenda and ensuring the coherence of research activities across the institute.

The Scientific Director serves as the chairman of the institute's academic council (see **Figure 1**), a member of all key decision-making committees and represents MIGAL in both national and international scientific and governmental forums. A critical aspect of the role includes fostering collaboration between the various research groups within MIGAL and maintaining close academic coordination with the Faculty of Science and Technology at Tel-Hai College (see **Figure 2**).

In addition to facilitating research integration, the Scientific Director acts as the primary scientific advisor to the CEO of MIGAL, providing strategic input on research direction, scientific priorities, and development opportunities. To preserve scientific integrity and institutional trust, the director is required to maintain a position of independence and avoid any conflicts of interest in all institutional matters.

Most of the research groups at MIGAL conducted also applied research. In accordance with the structure of the research departments (see **Figure 2**), the research focused on agriculture, environment, food, nutrition and health. Based on these studies at MIGAL and the teaching and learning in the Faculty of Science and Technology at Tel Hai College, a scientific and professional infrastructure was created to develop the region. This infrastructure made it possible to choose the fields of Agrotech and Foodtech as suitable for the industrial development of the Upper Galilee region with the help of the government [7].

7. Appointment Requirements

There was a difference in the requirements from a researcher at MIGAL and a faculty member at Tel-Hai College, stemming from the distinct emphases of the two institutions, although there is considerable overlap between them. In both cases, a prerequisite is that the individual holds a PhD and is a qualified researcher.

However, at MIGAL, a researcher appointed as a group leader must demonstrate additional qualifications beyond the ability to lecture or serve as academic staff at Tel-Hai College. Specifically, he is expected to lead a research group with graduate students, secure research funding from various sources—including national and international competitive grants, and contribute to MIGAL's organizational and administrative development.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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