Research interests

The IAG-switch sex differentiating mechanism in crustacean reproduction
Functional genomics in crustacean physiology
Crustaceans’ growth, physiology and biomineralization
Crustaceans as biocontrol agents over disease-carrying snails

Employment

Distinguished Professor
Full Professor
Department of Life Sciences
Ben-Gurion University of the Negev
1 Oct 2005 → present

Member
School of Sustainability and Climate Change
Ben-Gurion University of the Negev
1 Oct 2021 → present

Research outputs

All-female crayfish populations for biocontrol and sustainable aquaculture

Community composition of invasive, outbreak, and non-pest snail species along a source spring-to-fishpond gradient in a spatially structured aquacultural region

Ferroptosis precedes apoptosis to facilitate specific death signalling by fatty acids

Computer vision system for counting crustacean larvae by detection

A tunable reflector enabling crustaceans to see but not be seen

Enhanced proliferation in a prawn embryonic primary cell culture ectopically expressing mutated Ras
Correlation between metabolomic profile and proliferation of Macrobrachium rosenbergii primary embryonic cell culture

The transcriptional landscape of the giant freshwater prawn: Embryonic development and early sexual differentiation mechanisms

On genome editing in embryos and cells of the freshwater prawn Macrobrachium rosenbergii

Genes Encoding the Glycoprotein Hormone GPA2/GPB5 and the Receptor LGR1 in a Female Prawn

Genes encoding putative bicarbonate transporters as a missing molecular link between molt and mineralization in crustaceans

Lentiviral-Transduced Ectopic Expression of Androgenic Hormone in a Crustacean Hematopoietic Primary Cell Culture

Protandric Transcriptomes to Uncover Parts of the Crustacean Sex-Differentiation Puzzle

The crustacean androgen: a hormone in an isopod and androgenic activity in decapods'

Transcriptome analysis reveals the endocrine regulation on the expression of iag in Litopenaeus vannamei
Chen, K., Li, S., Xiang, J., Sagit, A. & Li, F., 1 Jun 2021, In: Journal of Marine Science and Engineering. 9, 6, 677.


Transcriptional silencing of vitellogenesis-inhibiting and molt-inhibiting hormones in the giant freshwater prawn, Macrobrachium rosenbergi, and evaluation of the associated effects on ovarian development

Reinforcement of bio-apatite by zinc substitution in the incisor tooth of a prawn

The protandric life history of the Northern spot shrimp Pandalus platyceros: molecular insights and implications for fishery management

Two Homogametic Genotypes – One Crayfish: On the Consequences of Intersexuality
From sporadic single genes to a broader transcriptomic approach: Insights into the formation of the biomineralized exoskeleton in decapod crustaceans

The IAG-Switch and Further Transcriptomic Insights Into Sexual Differentiation of a Protandric Shrimp

Characterization and possible function of an enigmatic reflector in the eye of the shrimp: *Litopenaeus vannamei*

Hemocyanin modification of chitosan scaffolds with calcium phosphate phases increase the osteoblast/osteoclast activity ratio—A co-culture study

The "IAG-Switch"—A Key Controlling Element in Decapod Crustacean Sex Differentiation

The iag gene in the invasive crayfish *Procambarus clarkii* – towards sex manipulations for biocontrol and aquaculture

Prawn monosex populations as biocontrol agents for snail vectors of fish parasites

Crayfish hemocyanin on chitin bone substitute scaffolds promotes the proliferation and osteogenic differentiation of human mesenchymal stem cells

A highly reflective biogenic photonic material from core–shell birefringent nanoparticles

Three generations of prawns without the Z chromosome: Viable WW *Macrobrachium rosenbergii* all-female populations in polyculture with *Oreochromis niloticus*

Sex-Biased CHHs and Their Putative Receptor Regulate the Expression of IAG Gene in the Shrimp *Litopenaeus vannamei*

Penaeid shrimp genome provides insights into benthic adaptation and frequent molting

Production of WW males lacking the masculine Z chromosome and mining the *Macrobrachium rosenbergii* genome for sex-chromosomes
Screening for Dmrt genes from embryo to mature *Macrobrachium rosenbergii* prawns

Modelled effects of prawn aquaculture on poverty alleviation and schistosomiasis control

CPAP3 proteins in the mineralized cuticle of a decapod crustacean

The search for proteins involved in the formation of crustacean cuticular structures

A Putative Insulin-like Androgenic Gland Hormone Receptor Gene Specifically Expressed in Male Chinese Shrimp

Optically functional isoxanthopterin crystals in the mirrored eyes of decapod crustaceans

Exploitation of reproductive barriers between *Macrobrachium* species for responsible aquaculture and biocontrol of schistosomiasis in West Africa

Size-selective predation by all-male prawns: implications for sustainable biocontrol of snail invasions

Calculating the Structure of Isoxanthopterin Crystals, Efficient Reflectors in the Crustacean Eyes

Sex Control in Cultured Decapod Crustaceans

Insulin-Like Gene in Prawns and Uses Thereof

Short versus long double-stranded RNA activation of a post-transcriptional gene knockdown pathway

The gene encoding the insulin-like androgenic gland hormone in an all-female parthenogenetic crayfish

All-female monosex culture in the freshwater prawn *Macrobrachium rosenbergii* – A comparative large-scale field study
In Situ Crosslinking of Highly Porous Chitosan Scaffolds for Bone Regeneration: Production Parameters and In Vitro Characterization

MARS: A protein family involved in the formation of vertical skeletal elements

Implant recognition and gender expression following ampoule-androgenic gland implantation in Litopenaeus vannamei females (Penaeidae)

Three generations of cultured prawn without W chromosome

A Single Injection of Hypertrophied Androgenic Gland Cells Produces All-Female Aquaculture

The mineralized exoskeletons of crustaceans

Production of recombinant insulin-like androgenic gland hormones from three decapod species: In vitro testicular phosphorylation and activation of a newly identified tyrosine kinase receptor from the Eastern spiny lobster, Sagmariasus verreauxi

Calcium phosphate mineralization is widely applied in crustacean mandibles

Identification and characterization of an insulin-like receptor involved in crustacean reproduction

Biotechnology, biocontrol and conservation: Potential approaches-harnessing RNAi-based sex-differentiation manipulations in decapods

A crayfish molar tooth protein with putative mineralized exoskeletal chitinous matrix properties

Exoskeletons across the pancrustacea: Comparative morphology, physiology, biochemistry and genetics

Proteomic analysis of the crayfish gastrolith chitinous extracellular matrix reveals putative protein complexes and a central role for GAP 65
Binary gene expression patterning of the molt cycle: The case of chitin metabolism

A novel chitin binding crayfish molar tooth protein with elasticity properties

Binary gene expression patterning of the molt cycle: The case of chitin metabolism

Identification and characterization of androgenic gland specific insulin-like peptide-encoding transcripts in two spiny lobster species: Sagmariasus verreauxi and Jasus edwardsii

Binary patterning of chitin metabolism pathways in a crayfish: a tool for multi gene studies of the molt cycle in arthropods

Stable amorphous calcium carbonate comprising phosphorylated amino acids, synthetic phosphorylated peptides and gastrolith proteins

Layered growth of crayfish gastrolith: About the stability of amorphous calcium carbonate and role of additives

On the safety of RNAi usage in aquaculture: The case of all-male prawn stocks generated through manipulation of the insulin-like androgenic gland hormone

Use of crustacean gastrolith components or artificial mixture comprising calcium carbonate, chitin and polypeptide in the preparation of a medicament for treating conditions associated with calcium metabolism or calcium signaling

Expression of cytoskeletal and molt-related genes is temporally scheduled in the hypodermis of the crayfish Procambarus clarkii during premolt

Increased calcium absorption from synthetic stable amorphous calcium carbonate: Double-blind randomized crossover clinical trial in postmenopausal women

The Prawn Macrobrachium vollenhovenii in the Senegal River Basin: Towards Sustainable Restocking of All-Male Populations for Biological Control of Schistosomiasis
Neo-females production and all-male progeny of a cross between two Indian strains of prawn (*Macrobrachium rosenbergii*): Population structure and growth performance under different harvest strategies

Stable amorphous calcium carbonate comprising phosphorylated amino acids and use thereof in pharmaceutical and nutraceutical formulations

One precursor, three apolipoproteins: The relationship between two crustacean lipoproteins, the large discoidal lipoprotein and the high density lipoprotein/β-glucan binding protein

Sustainable Aquaculture Using Temporal RNA Interference in Crustaceans: The Case of the Insulin-like Androgenic Gland Hormone and Prawn Monosex Culture

Composition Comprising Crustacean Gastrolith Components, Calcium Carbonate and its Use

Gene Silencing in Crustaceans: From Basic Research to Biotechnologies

Epidermal growth factor receptor in the prawn *Macrobrachium rosenbergii*: Function and putative signaling cascade

A crayfish insulin-like-binding protein: Another piece in the androgenic gland insulin-like hormone puzzle is revealed

An androgenic gland membrane-anchored gene associated with the crustacean insulin-like androgenic gland hormone

Identification of receptor-interacting regions of vitellogenin within evolutionarily conserved β-sheet structures by using a peptide array

Hemocyanin with phenoloxidase activity in the chitin matrix of the crayfish gastrolith

Post-Embryonic Transcriptomes of the Prawn *Macrobrachium rosenbergii*: Multigenic Succession through Metamorphosis

Bone Loss Prevention in ovariectomized rats using stable amorphous calcium carbonate
Monosex culture of prawns through androgenic gene silencing

Novel chitin binding proteins with suggested role in organization of a crustacean cuticular chitinous extracellular matrix

The insulin-like androgenic gland hormone in crustaceans: From a single gene silencing to a wide array of sexual manipulation-based biotechnologies

Enamel-like apatite crown covering amorphous mineral in a crayfish mandible

Stimulation of molt by RNA interference of the molt-inhibiting hormone in the crayfish Cherax quadricarinatus

On the involvement of proteins in the assembly of the crayfish gastrolith extracellular matrix

Novel molt-related hemocyanin family proteins from extracellular matrix of crustacean gastroliths

The identification of Cq-MAG, a novel androgenic gland-specific gene encoding a putative crustacean membrane-anchored protein

Toward a sustainable production of genetically improved all-male prawn (Macrobrachium rosenbergii): Evaluation of production traits and obtaining neo-females in three Indian strains

Timing sexual differentiation: Full functional sex reversal achieved through silencing of a single insulin-like gene in the prawn, Macrobrachium rosenbergii

Isolation and characterization of a female-specific DNA marker in the giant freshwater prawn Macrobrachium rosenbergii

In situ molecular NMR picture of bioavailable calcium stabilized as amorphous CaCO₃ biomineral in crayfish gastroliths

Isolation and characterization of the complete cDNA sequence encoding a putative insulin-like peptide from the androgenic gland of Penaeus monodon
Expression of an Androgenic Gland-Specific Insulin-Like Peptide during the Course of Prawn Sexual and Morphotypic Differentiation

Insulin-like gene in prawns and uses thereof

Stable amorphous calcium carbonate comprising phosphorylated amino acids, synthetic phosphorylated peptides, and gastrolith proteins

Solubility and bioavailability of stabilized amorphous calcium carbonate

Cloning of an insulin-like androgenic gland factor (IAG) from the blue crab, Callinectes sapidus: Implications for eyestalk regulation of IAG expression

From the discovery of the crustacean androgenic gland to the insulin-like hormone in six decades

A sexual shift induced by silencing of a single insulin-like gene in crayfish: Ovarian upregulation and testicular degeneration

Stabilization of amorphous calcium carbonate by phosphate rich organic matrix proteins and by single phosphoamino acids

A protein involved in the assembly of an extracellular calcium storage matrix

Multi-transcript expression patterns in the gastrolith disk and the hypodermis of the crayfish Cherax quadricarinatus at premolt

N-glycan moieties of the crustacean egg yolk protein and their glycosylation sites

Towards Monosex Culture of Prawns (Scampi): As a follow-up to the discovery of an androgenic gland specific insulin-like factor

Composition comprising crustacean gastrolith components and its use
The Biology and Management of Size Variation  

Molt-inhibiting hormone stimulates vitellogenesis at advanced ovarian developmental stages in the female blue crab, *Callinectes sapidus* 2: Novel specific binding sites in hepatopancreas and cAMP as a second messenger  

Insulin-like gene of prawns and uses thereof  

Temporal silencing of an androgenic gland-specific insulin-like gene affecting phenotypical gender differences and spermatogenesis  

A Novel Molt-related Protein with a Possible Role in the Formation of Crayfish Calcium Storage Deposits  

Future prospects of crustacean monosex culture: could giant prawn monosex culture benefit from the discovery of an insulin-like factor?  

A novel approach to denitrification processes in a zero-discharge recirculating system for small-scale urban aquaculture  

A gastrolith protein serving a dual role in the formation of an amorphous mineral containing extracellular matrix  

Composition Comprising Crustacean Gastrolith Components, Calcium Carbonate and its Use  

Orally-administrable compositions comprising stable amorphous calcium carbonate  

Coordination of Reproduction and Molt in Decapods  

Male Reproductive Hormones  

Experimental evidence of a sex reversal process in the shrimp *Hippolyte inermis*  
Reciprocal changes in calcification of the gastrolith and cuticle during the molt cycle of the red claw crayfish *Cherax quadricarinatus*

Male and female reproduction in penaeid shrimps

Hepatopancreatic multi-transcript expression patterns in the crayfish *Cherax quadricarinatus* during the moult cycle

Search for hepatopancreatic ecdysteroid-responsive genes during the crayfish molt cycle: From a single gene to mutagenicity

Do benthic and planktonic diatoms produce equivalent effects in crustaceans?

Characterization of a vasa-like gene from the Pacific white shrimp *Litopenaeus vannamei* and its expression during oogenesis

Insulin and gender: An insulin-like gene expressed exclusively in the androgenic gland of the male crayfish

Dynamics of reproduction in a captive shrimp broodstock: Unequal contribution of the female shrimp and a hidden shortage in competent males

Males also have their time of the month! Cyclic disposal of old spermatophores, timed by the molt cycle, in a marine shrimp

Characterization of glycan moieties in Vitellogenin of the freshwater prawn *Macrobrachium rosenbergii*, and bioinformatics comparison with other decapod crustaceans

Intersexuality and behavior in crayfish: The de-masculinization effects of androgenic gland ablation

A novel two-step procedure for mass production of all-male populations of the giant freshwater prawn *Macrobrachium rosenbergii*

Growth of redclaw crayfish (*Cherax quadricarinatus*) in a three-dimensional compartments system: Does a neighbor matter?
Complete sequence of *Litopenaeus vannamei* (Crustacea)

Orally-administrable compositions comprising stable amorphous calcium carbonate

Expression of the reproductive female-specific vitellogenin gene in endocrinologically induced male and intersex *Cherax quadricarinatus* crayfish

The androgenic gland and monosex culture of freshwater prawn *Macrobrachium rosenbergii* (De Man): A biotechnological perspective

Structural characterization of the N-glycan moiety and site of glycosylation in vitellogenin from the decapod crustacean *Cherax quadricarinatus*

Reproductive readiness of the shrimp *Litopenaeus vannamei* grown in a brackish water system

Androgenic gland implantation promotes growth and inhibits vitellogenesis in *Cherax quadricarinatus* females held in individual compartments

Culture of the crayfish *Cherax quadricarinatus* in an intensive growout separate cell system- is it feasible? B. Effects of cell size on all male culture yield

Sex determination in crayfish: Are intersex *Cherax quadricarinatus* (Decapoda, Parastacidae) genetically females?

Male-like behavioral patterns and physiological alterations induced by androgenic gland implantation in female crayfish

The influence of androgenic gland implantation on the agonistic behavior of female crayfish (*Cherax quadricarinatus*) in interactions with males

The soft red patch of the Australian freshwater crayfish (*Cherax quadricarinatus* (von Martens)): A review and prospects for future research

Culture of the crayfish *Cherax quadricarinatus* in an intensive growout separate cell system- is it feasible? A. Differences in growth rate between genders.
Intensification of redclaw crayfish *Cherax quadricarinatus* culture: II. Growout in a separate cell system

Intensification of redclaw crayfish *Cherax quadricarinatus* culture I. Hatchery and nursery system

On intersexuality in the crayfish *Cherax quadricarinatus*: An inducible sexual plasticity model

The eyestalk-androgenic gland-testis endocrine axis in the crayfish *Cherax quadricarinatus*

The vitellogenin cDNA of *Cherax quadricarinatus* encodes a lipoprotein with calcium binding ability, and its expression is induced following the removal of the androgenic gland in a sexually plastic system

The vitellogenin gene in the crayfish *Cherax quadricarinatus*: expression and encoded proteins

Physiological effects of methyl farnesoate and pyriproxyfen on wintering female crayfish *Cherax quadricarinatus*

Is the unique negatively charged polypeptide of crayfish yolk HDL a component of crustacean vitellin?

Effects of implantation of hypertrophied androgenic glands on sexual characters and physiology of the reproductive system in the female red-claw crayfish, *Cherax quadricarinatus*

Changes in protein kinase C during vitellogenesis in the crayfish *Cherax quadricarinatus* - Possible activation by methyl farnesoate

High-density lipoprotein associated with secondary vitellogenesis in the hemolymph of the crayfish *Cherax quadricarinatus*

Oocyte development and polypeptide dynamics during ovarian maturation in the red-claw crayfish *Cherax quadricarinatus*

The hepatopancreas as a site of yolk protein synthesis in the prawn *Macrobrachium rosenbergii*

The Biology and Management of Size Variation
Endocrine balance between male and female components of the reproductive system in intersex *Cherax quadricarinatus* (Decapoda)

A newly established ELISA showing the effect of the androgenic gland on secondary-vitellogenic-specific protein in the hemolymph of the crayfish *Cherax quadricarinatus*

Culture of the Australian red-claw crayfish (*Cherax quadricarinatus*) in Israel III. Survival in earthen ponds under ambient winter temperatures

Administration of methyl farnesoate through the artemia vector, and its effect on *Macrobrachium rosenbergii* larvae

Comparative study of effects of prostaglandin E$_2$ on cAMP levels in gonads of the prawn *Macrobrachium rosenbergii* and the crayfish *Cherax quadricarinatus*

Effect of methyl farnesoate on late larval development and metamorphosis in the prawn *Macrobrachium rosenbergii* (Decapoda, Palaemonidae): A juvenoid-like effect?

Culture of the Australian red-claw crayfish (*Cherax quadricarinatus*) in Israel: II. Second growout season of overwintered populations

Reproduction and molt in previously spawned and first-time spawning red-claw crayfish *Cherax quadricarinatus* females following eyestalk ablation during the winter reproductive-arrest period

Sexual differentiation in decapod crustaceans: Role of the androgenic gland

Intersexuality and its Control by the Androgenic Gland in the Crayfish *Cherax quadricarinatus*

Gonad maturation, morphological and physiological changes during the first reproductive cycle of the crayfish *Cherax quadricarinatus* female

Intersex red claw crayfish, *Cherax quadricarinatus* (von Martens): Functional Males with Pre-vitellogenic Ovaries

Prostaglandin E$_2$ in Previtellogenic Ovaries of the Prawn *Macrobrachium rosenbergii*: Synthesis and Effect on the Level of cAMP
Growth, size rank, and maturation of the freshwater prawn, *Macrobrachium rosenbergii*: analysis of marked prawns in an experimental population

Methyl farnesoate in the prawn *Macrobrachium rosenbergii*: Synthesis by the mandibular organ in vitro, and titers in the hemolymph

Relationship of claw form and exoskeleton condition to reproductive system size and methyl farnesoate in the male spider crab, *Libinia emarginata*

Testicular thymidine incorporation in the prawn *Macrobrachium rosenbergii*: Molt cycle variation and ecdysteroid effects in vitro

Juvenile hormone-like compounds and reproduction in male and female crustaceans: with implications for aquaculture

Effect of androgenic gland ablation on morphotypic differentiation and sexual characteristics of male freshwater prawns, *Macrobrachium rosenbergii*

Growth, maturation and progeny of sex-reversed

Male reproduction in the freshwater prawn *Macrobrachium rosenbergii* (Decapoda, Palaemonidae): Physiology and endocrine regulation

The production of *Macrobrachium rosenbergii* in monosex populations. III. Yield characteristics under intensive monoculture conditions in earthen ponds

Morphotypic differentiation of males of the fresh-water prawn *Macrobrachium rosenbergii*: changes in the midgut glands and the reproductive system

Spermatogenesis and sperm storage in the testes of the behaviorally distinctive male morphotypes of *Macrobrachium rosenbergii* (Decapoda, Palaemonidae)

THE ANDROGENIC GLAND IN CRUSTACEA-WITH EMPHASIS ON THE CULTURED FRESH-WATER PRAWN *MACROBRACHIUM ROSENBERGII*-A REVIEW

Morphotypic differentiation of male Malaysian giant prawns, *Macrobrachium rosenbergii*
Production of *Macrobrachium rosenbergii* in monosex populations: Yield characteristics under intensive monoculture conditions in cages

Rapid identification of reproductive state and the receptive period of females in pond populations of *Macrobrachium rosenbergii* - A new technique

Alternative mating strategies in male morphotypes of the freshwater prawn *Macrobrachium rosenbergii* (De Man)

Activities

conference- colors of nutrition in Israel
Iris Shai (Other), Jack Gilron (Participant), Sagi (Participant), Sammy Boussiba (Participant), Aaron Fait (Participant) & Frank Hu (Other)
31 Mar 2019 → 4 Apr 2019

International Society for Invertebrate Reproduction and Development (External organization)
Amir Sagi (Chair)
2010 → 2013

Sigma Xi (External organization)
Amir Sagi (Member)
1999

Prizes

Best Lecturer of the Year in Biology
Sagi, Amir (Recipient), 1997

Excellence in Research Award (TCSERA)
Sagi, Amir (Recipient), 2016

ICA award for leading entrepreneurship in agriculture and biotechnology, with Enzootic and Northern prawns
Sagi, Amir (Recipient), 2018

Incumbent of the Judith and Murray Shusterman Chair for Career Development in Physiology
Sagi, Amir (Recipient), 1997

Lily and Sidney Oelbaum Chair in Applied Biochemistry
Sagi, Amir (Recipient), 2010

The Global Aquaculture Alliance’s inaugural Novus Global Aquaculture Innovation Award
Sagi, Amir (Recipient), 2013
The Landau Prize for Sciences and Arts
Sagi, Amir (Recipient), 2014