Rの生命現象を分子レベルで解明し、それらの異常によるがんな 意思の分子機序を理 一る。 伝情報の発現制御機構を分子レベルで理解するために、転写反 一関与する転写因子 クロマチン関連因子の実験・研究を行う。特にiPS細胞の誘導や分 こおける遺伝子発現 即機構を解析し、それらの変化を効率良く起こすシステムの開発を ある。 力化におけるゲノム不安定性誘導機構の研究、ゲノムワイドの遺 とタンパク質発現解 いらの診断・創薬ターゲットの研究を行う。 型に、温度・pHなどの環境変化や栄養源飢餓などのストレスが生じ 、それらに対応する細胞応答が起こることで、細胞の恒常性が維 に、温度・pHなどの環境変化や栄養源飢餓などのストレスが生じ 、それらに対応する細胞応答が起こることで、細胞の恒常性が維 に、温度・pHなどの環境変化や栄養源飢餓などのストレスが生じ 、それらに対応する細胞応答が起こることで、細胞の恒常性が維 に、温度・pHなどの環境変化や栄養源飢餓などのストレスが生じ 、それらに対応する細胞応答が起こることで、細胞の恒常性が維 に、温度・pHなどの環境変化や栄養源飢餓などのストレスが生じ 、それらに対応する細胞応答が起こることで、細胞の恒常性が維 に、温度・pHなどの環境変化や栄養源飢餓などのストレスが生じ 、それらに対応する細胞のを行っています。具体的には、(1)酵母と動物細胞に は、(1)が、(1)が、(1)が、(1)が、(1)が、(1)が、(1)が、(1)が	Molecular Biological Oncology (Molecular Cell Biology)  English  O possible  kirie@md.tsukuba.ac.jp  Lecture, presentation and discussion  1-2  I Spring semester / II Autumn semester  Conference room, other  i: 2.0  II: 2.0  III: 3.0  III: 2.0  III: 3.0  III: 4.0  III: 5.0  III: 5.0  III: 5.0  III: 6.0  III: 6.0  III: 8.0  III: 9.0  I	I: 2.0  II: 2.0  (事前にメールで連絡すること) 入江 賢児: kirie@md.tsukuba.ac.jp 水野 智亮: mizuno@md.tsukuba.ac.jp 須田 恭之: ysuda@md.tsukuba.ac.jp  [汎用] 知の創成力、コミュニケーション能力  【専門】研究課題設定力、先端研究遂行力、専門知識運用力情報発信力、  遺伝子、酵母、シグナル伝達、遺伝子発現制御  ・非対称分裂、細胞極性の形成、mRNA局在の制御機構の研究を通じて、発生や分化など高次の生命現象を分子レベルで解明し、それらの異常によるがんなど疾患の分子機序を理解する。 ・遺伝情報の発現制御機構を分子レベルで理解するために、転写反応に関与する転写因子やクロマチン関連因子の実験・研究を行う。特にiPS細胞の誘導や分化における遺伝子発現制御機構を解析し、それらの変化を効率良く起こすシステムの開発を試みる。	Cutting-edge research execution skills, Working knowledge in the specialized field, Information and communication technology skills  Gene, yeast, signal transduction, regulation of gene expression  Regulation of gene expression, cell polarization, and asymmetric cell division are critical for generating cellular diversity in development and differentiation of living organisms. These processes are dynamically regulated, and loss of their regulation is involved in the pathogenesis of human diseases including cancer. Our research focuses on the molecular mechanisms of transcriptional regulation, chromatin remodeling, mRNA localization, and translational control in development and differentiation using biochemical, cell biological, and genetic approaches. Roles of gene regulation in cell reprogramming and differentiation as well as development of an efficient system to induce approaches and differentiation.  By reading abstracts of original papers in English, we understand the contents and standards of leading research on the molecular mechanisms of "post—transcriptional regulation of gene expression" and "intracellular signaling system" or important research that we need to understand, and You will	応談    kirie@md.tsukuba.ac.jp     実験・実習   「大学・大学・大学・大学・大学・大学・大学・大学・大学・大学・大学・大学・大学・大	pathogenesis of human diseases including cancer. Our research focuses on the molecular mechanisms of transcriptional regulation, chromatin remodeling, mRNA localization, and translational control in development and differentiation using biochemical, cell biological, and genetic approaches. Roles of gene regulation in cell reprogramming and differentiation as well as development of an efficient system to induce mechanisms and differentiation. Learn the principles and methods of the experiments required for research on the molecular mechanisms of "post-transcriptional regulation of gene expression" and "intracellular signaling system", and learn safe handling. Develop skills as basic researcher in molecular biology by acquiring
・ 個加.tsukuba.ac.jp  ・ 個加.tsukuba.ac.jp  ・ 一変、他  ・ の  ・ の  ・ 前にメールで連絡すること)  「 賢児・kirie@mdtsukuba.ac.jp  ・ 智売・mizuno@md.tsukuba.ac.jp  ・ 智売・mizuno@md.tsukuba.ac.jp	English  O possible  kirie@md.tsukuba.ac.jp  Lecture, presentation and discussion  1-2  I Spring semester / II Autumn semester  Conference room, other  i: 2.0  Ii: 2.0  (make an appointment by E-mail)  IRIE Kenji: kirie@md.tsukuba.ac.jp  MIZUNO Tomoaki: mizuno@md.tsukuba.ac.jp  SUDA Yasuyuki: ysuda@md.tsukuba.ac.jp  Generic Competence] Intellectual creativity, Communication skills  (Specific Competence] Research planning skills, Cutting-edge research execution skills, Working knowledge in the specialized field, Information and communication technology skills  Gene, yeast, signal transduction, regulation of gene expression  Regulation of gene expression, cell polarization, and asymmetric cell division are critical for generating cellular diversity in development and differentiation of living organisms. These processes are dynamically regulated, and loss of their regulation is involved in the pathogenesis of human diseases including cancer. Our research focuses on the molecular mechanisms of transcriptional regulation, chromatin remodeling, mRNA localization, and translational control in development and differentiation using biochemical, cell biological, and genetic approaches. Roles of gene regulation in cell reprogramming and differentiation as well as development of an efficient system to induce  When environmental changes such as temperature and pH or stresses such as nutrient starvation occur in cells, a corresponding cellular response occurs to maintain cell homeostasis. In our laboratory, we use Saccharomyces cerevisiae, a unicellular eukaryote, to control the homeostasis of cells from the viewpoint of "post—transcriptional regulation of gene expression" and "intracellular signaling system". I am studying the	英語  ○可	English	応談    kirie@md.tsukuba.ac.jp     実験・実習   「大学・大学・大学・大学・大学・大学・大学・大学・大学・大学・大学・大学・大学・大	English  TBD upon request.  kirie@md.tsukuba.ac.jp  Practice  1-2  I Spring semester / II Autumn semester  Conference room, other  I: 2.0  II: 2.0  II: 2.0  II: 2.1  IRIE Kenji: kirie@md.tsukuba.ac.jp  MIZUNO Tomoaki: mizuno@md.tsukuba.ac.jp  SUDA Yasuyuki: ysuda@md.tsukuba.ac.jp  [Generic Competence] Intellectual creativity, Communication skills  ISpecific Competence] Research planning skills, Cutting-edge research execution skills, Working knowledge in the specialized field, Information and communication technology skills  Gene, yeast, signal transduction, regulation of gene expression  Regulation of gene expression, cell polarization, and asymmetric cell division are critical for generating cellular diversity in development and differentiation of living organisms. These processes are dynamically regulated, and loss of their regulation is involved in the pathogenesis of human diseases including cancer. Our research focuses on the molecular mechanisms of transcriptional regulation, chromatin remodeling, mRNA localization, and translational control in development and differentiation using biochemical, cell biological, and genetic approaches. Roles of gene regulation in cell reprogramming and differentiation as well as development of an efficient system to  Learn the principles and methods of the experiments required for research on the molecular mechanisms of "post-transcriptional regulation of gene expression" and "intracellular signaling system", and learn safe handling. Develop skills as basic researcher in molecular biology by acquiring
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[門] 研究課題設定力、先端研究遂行力、専門知識運用力情報発信力、 「会子、酵母、シグナル伝達、遺伝子発現制御 対称分裂、細胞極性の形成、mRNA局在の制御機構の研究を通 、発生や分化など の生命現象を分子レベルで解明し、それらの異常によるがんな 患の分子機序を理 一る。 伝情報の発現制御機構を分子レベルで理解するために、転写反 に関与する転写因子 のマチン関連因子の実験・研究を行う。特にiPS細胞の誘導や分 おける遺伝子発現 即機構を解析し、それらの変化を効率良く起こすシステムの開発を かる。 したにおけるゲノム不安定性誘導機構の研究、ゲノムワイドの遺 ととタンパク質発現解 いらの診断・創薬ターゲットの研究を行う。 型に、温度・pHなどの環境変化や栄養源飢餓などのストレスが生じ、 それらに対応する細胞応答が起こることで、細胞の恒常性が維 にれる。私たちの研究室では、単細胞真遺伝子発現の転写後制御」 細胞内シグナル伝達系」の観点から、細胞の恒常性維持の分子メ になる、私たちの研究を行っています。具体的には、(1)酵母と動物細胞に は、名の研究を行っています。具体的には、(1)酵母と動物細胞に は、名の研究を行っています。具体的には、(1)酵母と動物細胞に は、名の研究を行っています。具体的には、(1)酵母と動物細胞に は、名の研究を行っています。具体的には、(1)酵母と動物細胞に は、名の研究を行っています。具体的には、(1)酵母と動物細胞に は、名の研究を行っています。具体的には、(1)酵母と動物細胞に は、名の研究を行っています。具体的には、(1)酵母と動物細胞に は、名の研究を行っています。具体的には、(1)酵母と動物細胞に は、(4)小胞輸送による前胞子膜形成の分子機構について、 のは、(4)小胞輸送による前胞子膜形成の分子機構について、 のは、(4)小胞輸送による前胞子膜形成の分子機構について、 のは、(4)小胞輸送による前胞子膜形成の分子機構について、 のは、(4)小胞輸送による前胞子膜形成の分子機構について、 のは、(4)小胞輸送による前胞子膜形成の分子機構について、 のは、(4)小胞輸送による前胞子膜形成の分子機構について、 のは、(4)小胞輸送による前胞子膜形成の分子機構について、 のは、(4)小胞輸送による前胞子膜形成の分子機構について、 のは、(4)小胞・大ので、(4)小胞・	skills  [Specific Competence] Research planning skills, Cutting-edge research execution skills, Working knowledge in the specialized field, Information and communication technology skills  Gene, yeast, signal transduction, regulation of gene expression  Regulation of gene expression, cell polarization, and asymmetric cell division are critical for generating cellular diversity in development and differentiation of living organisms. 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	mechanism. Specifically, (1) post-transcriptional regulation		plan your own creative and valuable research projects. As a basic researcher in molecular biology,		evaluating the reliability of the results.
予の基礎研究者として、自立して実験研究を企画・実施・評価でき なったながれる。	of gene expression by RNA-binding proteins in yeast and animal cells, (2) regulation of RNA localization and local		develop the ability to plan, conduct and evaluate experimental research based on global trends and		
だ力を育成する。	translation, (3) regulation of endoplasmic reticulum stress response, (4) We are studying the molecular mechanism of		standards.		
	prespore membrane formation by vesicle transport. Through discussions on research content, as a basic researcher in				
	the field of molecular biology, develop the ability to independently plan, conduct, and evaluate experimental				
Bらの実験研究の目的、方法、実験結果とその意義、今後行うべき研 CついてPCとプリントによるプレゼンテーションを行う。	1. To be able to give a presentation about your own	1. 主要科学雑誌やon lineの検索システムを用い、最新の英語原著論文の中から、読むべき論文を選ぶことができる。	1. To develop an ability to select important articles from latest ones by using online search service.	「遺伝子発現の転写後制御」と「細胞内シグナル伝達系」の分子メカニズムに関する研究に必要な実験の原理と方	
	2. To be able to explain originality and creativity of your	2. 選んだ論文を読んで理解するのみならず、論文に引用さ	2. Do develop an ability to introduce research topics to a		including transduction in Molecular Biological Officology.
・C説明できる。 目らの実験結果に対する質問とコメントを理解し、討論の内容を以後 F究の質の向上に反映できる。	own research project. 3. To be able to accept criticisms from other participants	の概要を他の学生に説明することができる。	3. To be able to discuss the unclear points and		
の学生の発表内容を理解し、その意義と欠点を理解し、その向上	to improve your own research project.  4. To be able to understand the presentations ofother	3. 他の学生が選んだ論文を事前に読み説明を聞いて理解 し、疑問点や当該研究の意義について討論することができ	significances of the articles which are explained by other paticipants.		
とめ建設的な質問や討論をすることができる。 目換えDNA実験を行なった場合、組換えDNA実験に関する法律と研		る。 4. 個々の原著論文の歴史的意義、教科書的全体像の中に	4. To develop an ability to evaluate the significance of the selected articles in the related field of research.		
5法を理解し、適切な組換えDNA実験を企画・申請・実施できる。 動物実験を行なった場合、動物実験に関する規則と生命倫理学的問	recombinant DNA according to the Act concerning recombinant DNA experiment.	おける位置づけを説明することができる。			
まを踏まえ、適切な動物実験を企画・申請・実施できる。 論文など自らの実験結果を発表する技量。	6. To be able to design and perform the animal experiments				
	7. To build abilities to presentand publish your own				
	experimental results.				
	None	なし	None	なし	None
カ目標の達成度を平常点(発表内容、討論内容)で評価する。	Students are evaluated by the achievement of the	   行動目標の1と2について平常点として評価し大旨できてい	Students are evaluated by the achievement of the	安定で信頼性の高い実験を行う技能による評価(50%)	Skills to obtain reliable experimental results (50%)
カ目標の1~3を指導に従って大旨でき、積極的に4を行っていると	- Good achieved under supervision in the SBOs 1 and 2:	行動目標の1と2について平常点として評価し大旨できてい	- Good achieved in the SBOs 1 and 2: Pass (C).	画の作成能力に関する口頭試問による評価(50%)	Understanding of results, and ability to design next experiments will be evaluated by experimental
4,1枚にまとめて提出させ、理解度を判定する。		ばB以上と判定する。	conducted SBO 3: Pass (B).	A: 80-89	notebook and discussion (50%) A+: Superior (more than 90: top 10%)
カ目標の1~4について優れていると判断され、5~7を指導に従っ 、旨できると判断されればAと判定する。	·	自分で重要と考えた論文の要約(A4,1枚)を月に2回提出させ、理解度を実際に評価し、優れていると判断されればAと	Dassa sii iiiittii saiiiiiai y si papsis (, i i pags,	B: 70-79 C: 60-69	A: Excellent (80-89: upper 20%) B: Good (70-79)
	cornia or procentation and diocassion.	判定する。	is confirmed,: Pass (A).	D: less than 60 (Failure)	C: Average (60-69) D: Failure (less than 60)
	achievement in SBOs 5-7: (A)		all SBOs : Pass (A+)		D. Fallure (less triair 60)
	SBOs : Pass (A+)				
自立して実験研究を企画・実施・評価できる能力について、各教	ability to independently plan, conduct, and evaluate		his/her ability to read and write research paper	からフィードバックをうける。	Feedback is given by each faculty member on the good points and areas for improvement in the
Nらフィードバックを受ける。 最100%	experimental research. Lecture 100%	演習(セミナー) 100%	critically. Training (Seminar) 100%	実験・実習 100%	practical experiments.  Experiment, Practice 100%
		毎週月曜に原著論文を配信するので事前に読み疑問点を抽出しておく。			Learned experiments must be repeated by the students, and establish stable and reliable
	results, discuss always with your laboratory colleagues, ask				technique.
	and independence	数材とする論文けDDCで配左する			
	Requirement to earn gradity Attendance 2004 and areas		Requirement to earn gradity Attendance 2004		SBO achievement leb note etc
7取得要件・80%以上の出度	•		· ·	単位取待委件:SBOが概ね達成されていること。美験ノート の提出など	aomevement, lab note etc.
立取得要件:80%以上の出席 研究室の授業への5回以上の出席		「「「」」、「「」、「」、「」、「」、「」、「」、「」、「」、「」、「」、「」、	In the control of more to other lab's classes.		
		わからないことは、その提ぶ質問し般決すること	Students should resolve the questions immediately.	基本的には分子細胞生物学研究室の学生を対象とする。 履修希望者は筆頭数員に連絡し、事前に許可を得るこ	Students should contact a responsible faculty member, and get permission beforehand.
				i.	Students should resolve the questions immediately
T究室の授業への5回以上の出席  「細胞生物学研究室の学生は当該実験実習とセットで受講するこ いらないことは、その場で質問し解決すること。	the course of Practice in Infection Biology. Students should resolve the questions immediately.		logically, and properly.		1
T究室の授業への5回以上の出席 - 細胞生物学研究室の学生は当該実験実習とセットで受講するこ	the course of Practice in Infection Biology.		logically, and properly.  Lecture and Discussion in Molecular Medical	と。 わからないことは、その場で調べたり質問して解決すること。 分子医科学特論I / 分子医科学特論II	Lecture and Discussion in Molecular Medical
第	標の達成度を平常点(発表内容、討論内容)で評価する。標の1と2を指導に従って大旨できればC以上と判断する。標の1~3を指導に従って大旨でき、積極的に4を行っているとれればB以上と判定する。1~3については発表と討論の概要校にまとめて提出させ、理解度を判定する。標の1~4について優れていると判断され、5~7を指導に従っできると判断されればAと判定する。できると判断されればAと判定する。のできると判断されればAと判定する。の%の実験研究の立案、方法の選択、結果の解釈を行い、教員や土での討論を常に行い、自らの創造力、自立力を向上させる。	8. To be able to design and perform the animal experiments according to the bioethical rule. 7. To build abilities to presentand publish your own experimental results.  None    Rome   Rome	6. To be able to design and perform the animal experiments according to the bioethical rule. 7. To build abilities to presentand publish your own experimentsl results.  None  「本し、「おしたのでは、「おいました」」 「おいました」」 「おいました。」 「おいました」」 「ないました。」 「おいました」」 「おいました」」 「おいました」」 「おいました」」 「おいました」」 「おいました」」 「おい	8. To be able to design and perform the animal experiments according to the bioethical rule, 7. To build abilities to present and publish your own experiments according to the bioethical rule, 8. To build abilities to present and publish your own experiments according to the bioethical rule, 7. To build abilities to present and publish your own experiments according to the bioethical rule, 8. To build abilities to present and publish your own experiments according to the bioethical rule, 7. To build abilities to present and publish your own experiments according to the bioethical rule, 8. To build abilities to present and publish your own experiments according to the bioethical rule, 7. To build abilities to present and publish your own experiments according to the bioethical rule, 7. To build abilities to present and publish your own experiments according to the bioethical rule, 7. To build abilities to present and publish your own experiments according to the bioethical rule, 7. To build abilities to present and publish your own experiments to be decided and publish your own experiments to be decided according to the bioethical rule, 7. To build abilities to present and publish your own experiments to be decided and publish your according to the bioethical rule, 7. To build abilities to present and publish your according to the bioethical rule, 7. To build abilities to present and publish your according to the publish your according to the decided according to the publish your according to the condition of the objectives listed in the SBO. To build rule, 7. To build abilities to present to the conditions of the objectives listed in the SBO. To build rule, 7. To build abilities to present to the school and publish your according to the publish	8. To be able to design and perform the animal experiments according to the betterholar rule. 7. To build abilities to presentand publish your own segmentations are evaluated by the achievement of the object 26 指揮によって大百さまれらした世間がら、