如何寫計畫心得分享

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>>>……

如何寫計畫”知易行難”

老師&研究人員　是最難被改變的一群人
（思想定型！食x不化?）

如你常拿不到計畫　請放棄你既有成見　接受別人建議

如你偶而拿不到計畫　請打開你的心房　接受我的建議

如你常拿得到計畫 恭喜你 希望我的建議
能讓你拿更高金額

如你RPI高 卻常拿不到計畫　“請完全接受別人建議”
會做研究 不懂如何表達　會“很可憐”

生物處102年度專題研究計畫(一般型)審查表

一、專題研究計畫：請綜合下列五點審查項目勾選等級及評給分數（70分）

□極優(70-63)　□優(62-57)　□可(56-50)　□差(< 50)　　評分：__70__

1. 研究主題之**重要性與創新性**。
2. 研究計畫撰寫之**完整性及妥適性**，**實驗設計及重要研究方法之可行性**。
3. 預期成果在**學術上或實用上之價值**。
4. 主持人**研究能力及經驗**，**文獻蒐集之完備性及對國內外相關研究現況是否清楚瞭解**。
5. 研究**人力配置、儀器、經費之申請額度及執行期限之合理性**。

二、主持人近五年內之研究成果及所反映之學術研究能力：請綜合下列二點審查項目勾選等級及評給分數（30分）

□極優(30-27)　□優(26-23)　□可(22-20)　□差(< 20)　　評分：__30__

1. 最近一件執行國科會研究計畫之**研究報告及成果是否良好**。
2. **近五年發表之研究成果（論文、專利及技轉等）之質與量**，在同研究領域同儕中之相對表現。

※計畫於該學門表現之百分比:

<10%□　10-20%□　20-30%□　30-40%□　40-50%□　>50%□

(請參101年各學門計畫審查排名統計表:　　)

總分(上兩項評分相加)：_____

※等級參考分數：(A)優先推薦(≥ 90)；(B)推薦(89-80)；(C)勉予推薦(79-70)；(D)不推薦(< 70)

How to Get a NSC Grant Successfully

主持人近五年內之研究成果及所反映之學術研究能力

30

1. 最近一件執行國科會研究計畫之**研究報告及成果是否良好**。

2. **近五年發表之研究成果（論文、專利及技轉等）之質與量**，在同研究領域同儕中之相對表現。

“提升自我的研究成果與戰鬥力”

加入績優研究室(群)、
參與跨領域合作計畫、申請校內計劃
（出力/善用自己專長）
讓研究戰鬥力爬上來

Project撰寫之心得分享

"Good Idea "

"體貼Reviewers"

To help reviews is to help yourself !

Writing a proposal

Research plan (~15 pages)

- ♥ Title/Abstract
- ♥ Specific aims (1 page)

50 % ♥ Background and significance

Why important? Novel? Gaps?

Preliminary studies will convince reviewers "You can do it"

40 % ♥ Research design and methods

- ♥ Anticipated Results (1 page)
- ♥ References (EndNote)

Content of Titles

- Strong, clear message（強&清楚的訊息）

- Word choice

  Quantitative: **Increase, Decrease, Reduced**

  Qualitative: **Improved, Impaired**

- Length of a title

  The shorter, the better

  < 100 characters (字元)

"PKC-α, a novel kinase involved in the apoptosis of septic liver"

"PKC-α acts as a novel kinase involved in the apoptosis of septic liver"

"Multiplex PCR for detecting gene deletions in muscular dystrophy"

"An improved multiplex PCR for detecting gene deletions in muscular dystrophy"

Attractive and easy to understand

Title.（點出所要做的東西的重點，畫龍點睛之妙.）

舉例:

Role of calcium in pharmacological studies. (最不好/不知道做什麼)

Role of calcium in pharmacological studies on PC12 cells. (至少知道是何細胞)

Role of calcium in effects of XXX on PC12 cells. (較好 /但不知 什麼effects)

Role of calcium in apoptotic effects of XXX on PC12 cells. (清楚)

Who?

Title of project

=

Face of girl

Abstract（全部project的縮影）

格式

1. Why do—(3~5行) **Importance/problems**

2. How do—(5~10行) **Hypothesis/Strategy**

+Preliminary results

3. Experimental approach– (5行) **Specific aims**

4. Anticipated Results—(1~2行) **Significance**

＞ 90% project/abstract是這種格式

1. Why do

Importance/problems

2. How do

Hypothesis/Strategy

+Preliminary results

3. Experimental approach

Specific aims

4. Anticipated Results—

Significance

(Why do) PEGylated nanoparticles (PEG-NPs) can be chemically modified by ligands or antibodies to increase their endocytosis and targeting specificity. However, this method often leads to the generation of heterogeneously modified Ab-PEG-NPs (variations in number and orientation of Ab), which limits its clinical applicability. To overcome this problem, (How do/Strategy) we have developed bispecific antibodies (BiAb) by fusing anti-HER2/EGFR scFv to the C-terminal of humanized anti-methoxy polyethylene glycol Fab (αmPEG) to form αmPEG-αHER2/EGFR bispecific antibodies (BiAb). The αmPEG end of bispecific antibodies could noncovalently bind the methoxy ends of PEGylated molecules. The other anti-HER2/EGFR end confers PEG-NPs with HER2/EGFR-specificity for targeting of HER2 or EGFR-expressing cancer cells. (Preliminary results) In this project, large amounts of αmPEG-αHER2/EGFR BiAb (mg/L) has been produced in BALB/c 3T3 cells. The BiAb shows the bifunctional property to bind mPEG and $HER2^+$/$EGRF^+$ tumor cells. Importantly, a simple step of mixing BiAb with mPEG-NPs the BiAb can specifically direct many PEG-NPs to target $HER2^+$/$EGFR^+$ tumor cells. Based on these promising results, (Experimental approach) we propose the following specific aims. 1) Optimal modification of PEGylated nanoparticles (PEG-NPs) by BiAb to form HER2/EGFR specific PEG-NPs (αHER2/EGFR-PEG-NPs). 2) Assess the endocytosis and cytotoxicity of αHER2/EGFR-PEG-NPs in tumor cells. 3) Image the tumor targeting and biodistribution of different αHER2/EGFR-PEG-NPs in vivo. 4) Determine the therapeutic index of αHER2/EGFR-PEG-NPs for $HER2^+$/$EGFR^+$ primary and metastatic tumors. (Anticipated Results) Successful development of this strategy is expected to provide valuable tools for non-covalent modification of any PEGylated NPs, for example, an one-step mix of currently used Lipo-Dox with BiAb will increase the specific targeting and therapeutic efficacy of Lipo-

Format of research project

- Title/Abstract
- Specific aims
- Background and Significant
  - Why important? Novel? Gaps??

  Preliminary studies
- Research design and methods
- Anticipated Results
- References

Specific aims: Clear & Concise（清楚&簡要的）

List the broad, long-term objectives

What the specific research proposed in the application is intended to accomplish.

State the hypothesis to be tested.

List specific aims
One by one

Potential outcome of this proposal

One page is recommended.

you get points for strength, not length.

For example:

long-term objectives

preliminary studies & hypothesis

List specific aims One by one (3 best)

Potential outcomes

(A) Long-term objectives: (開門見山)

To develop a non-immunogenecity and highly specificity of reporter gene to allow non-invasive assessment of the location, extent and persistence of gene expression in living animals and ultimately help optimize gene therapy protocols in the clinic.

(B) Specific Aims:

We have successfully developed a noninvasive imaging system based on the expression of anti-DNS antibody receptors (DNS receptor) on cell surface as reporter gene to trap DNS (hapten)-labeled imaging probes. Our previous results (92GM020/NRPGM) have demonstrated DNS-DTPA/^{111}In, DNS-iron oxide, DNS-quantum dot probes can be specifically targeted to the DNS reporter gene to assess the gene expression in living animals by gamma camera or magnetic resonance imaging (MRI) and cool-charged device (CCD) imaging. To increase the clinical potential of this imaging system, we purpose to humanize the murine Abs reporter genes to minimize human anti-murine Ab response and allow repeated and persistent imaging of gene expression in human gene therapy. To set up the preclinical imaging system, this proposal has the following goals and specific aims.

1. Humanized the murine antibody's reporter genes (anti-DNS and anti-PEG Abs can as control each other) to increase the clinical potential of the novel membrane Ab receptor/probes imaging system.

2. Set up a well-established human tumor model that expressed humanized Ab reporters and monitor the expression of reporter gene in vivo by different imaging probes and imaging systems.

3. The humanized Ab reporter genes will be inserted into the adenovirus vectors to form Ad-DNS and Ad-PEG virus and the distribution and expression of Ad-DNS and Ad-PEG virus in vitro and in vivo will be monitor by different imaging probes and imaging systems.

We believe that successfully development of the novel membrane-humanized receptors/DNS or PEG-probes imaging system possesses the greatest clinical potential of this imaging system to optimize gene therapy protocols in the clinic

Format of research project

- Title
- Specific aims
- **Background and Significance** 50 %
- **Why is it important? Novel? Gaps???**

  Preliminary studies (supporting)
- Research design and methods
- Anticipated results

研究計畫之背景及目的。

請詳述本研究計畫之背景、*目的*、重要性
及國內外有關本計畫之研究情況、
重要參考文獻之評述等。

Importance and relevance to the health problems of the nation

Outline

1. Background
2. Significance

Gaps?

3. Hypothesis/Strategy
4. preliminary results (supporting)

連貫性的描述

1. Background & Significance

1. Relevance of Background

(Current status of the field)

Has this area been studied before?

Relative to existing knowledge and theory, should be discussed.

(Their disadvantages?? Our advantages??)

2. Significance:

Innovation:

Does it address an important problem?

Will it advance scientific knowledge?

Challenge existing paradigms

Will it affect concepts or methods in this field?

Novel concepts, approaches, or methods?

Reasons for proposing the project (Rationale)

你所要探討領域的背景&重要性

1. Statement background & significance

2. Statement of the problems

目前現有的方法或理論仍有哪些不足

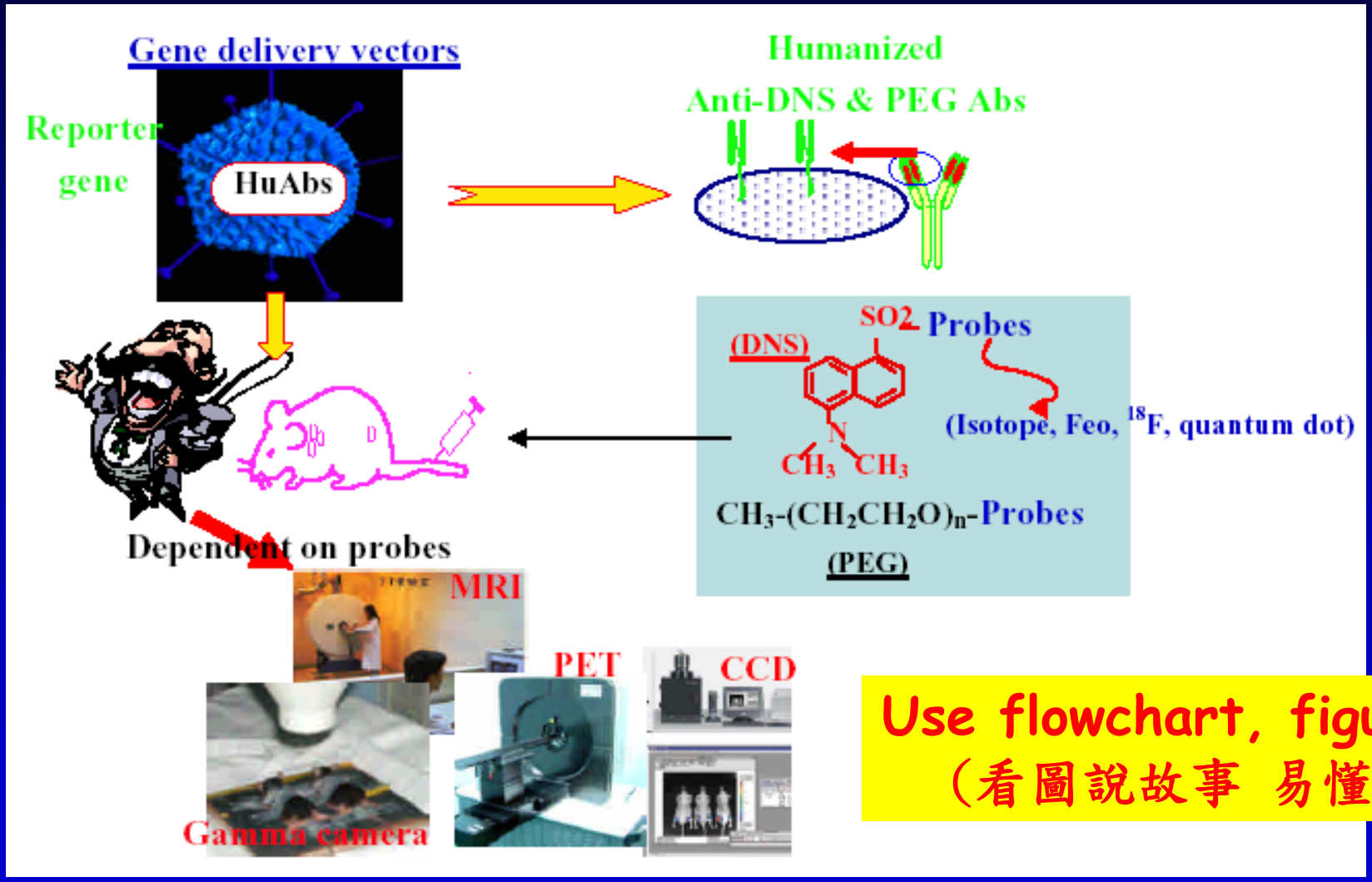
Gaps that the project is intended to fill

3. Hypothesis/Strategy

"Innovation"

Figure

Help reviewer to understand your hypothesis



Use flowchart, figures
（看圖說故事 易懂）

Advantages, contributions

Background &Significance

Gaps that the project is intended to fill

Hypothesis/Strategy

Use flowchart, figures
（看圖說故事 易懂）

(B) Background and Significance

Attachment of methoxy poly(ethylene glycol) (mPEG) to nanoparticles (NPs) liposomes, micelles and proteins had been proven to increase drug bioavailability, enhance blood circulation half-life [1] and escape capture by the reticuloendothelial system (RES) [2, 3] and increase tumor accumulation (the enhanced permeability and retention (EPR) effect) [4, 5]. PEGylated nanoparticles (mPEG-NPs) are highly regarded as the third generation of therapeutic agents, with an expected market of ten billion US dollars within five years [6, 7]. Many mPEG-NPs had been applied to clinical use [8]. ....However, several studies indicated that mPEG-NPs accumulated near the tumor but not endocytosis and penetration into tumor [16, 17], and some drugs cannot easily diffuse to tumor from mPEG-NPs [18]. These limitations decrease the cytotoxicity effect of tumors [19] and contrast sensitivity[20]. Increasing the specific targeting and internalization of mPEG-NPs by Ab/ligand conjugate are the best way to overcome these problems. Several studies indicated that chemical conjugation of antibodies or ligands with mPEG-NPs increased the specific targeting and intracellular uptake which improves the therapeutic outcome [19, 21-24].

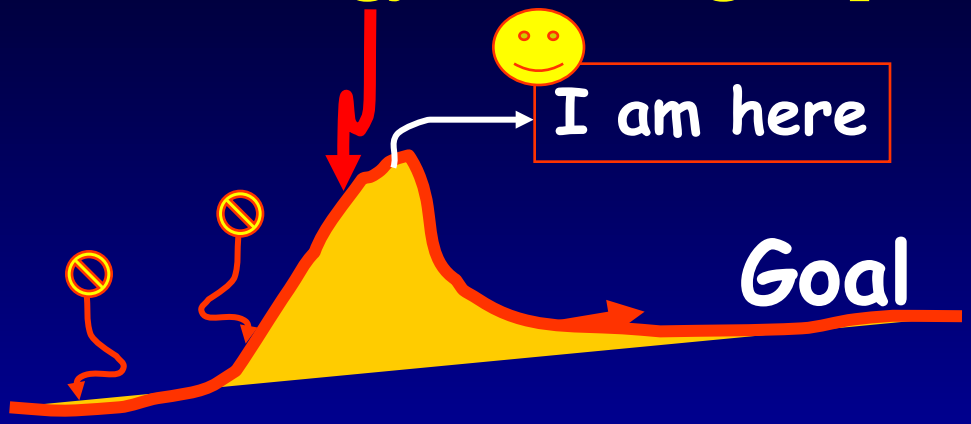
However, the chemical modification of Ab/ligands with PEG-NPs has some problems. (1). Most functional groups (amino, carboxyl, thiol groups) are abundant in ligands and the distribution of them within the epitope of antibodies may decrease its binding activity after chemical conjugation [25, 26]. (2). It also often leads to heterogeneous orientation of Ab/ligands and (3) difficulty in obtaining a reproducible product (variations in number of Ab) [27]. In addition, (4) chemical conjugation has the risk to alter the structure of nano-carriers, even encapsulated drugs [26]. Those drawbacks limit the clinical applicability. Therefore, creating a homogeneous orientation of ligand, maintaining the structure of NPs, reproducible and easy manipulation method for ligand conjugation to PEG-NPs is very important for clinical application.

In this project, we developed bispecific antibodies (BsAb) by fusing humanized anti-methoxy polyethylene glycol Fab (αmPEG) with anti-HER2/EGFR or DNS scFv to form αmPEG x αHER2/EGFR or αmPEG x αDNS (as control) BsAbs. The αmPEG end of BsAb could noncovalently modify the terminal end of the mPEG on PEGylated nanoparticles (mPEG-NPs), leading to the orientation of anti-HER2 or EGFR scFv to be homogeneous. The other anti-HER2/EGFR end offers non-targeted PEG-NPs to acquire the HER2/EGFR-specificity for the targeting of HER2 or EGFR-expressing cancer cells in vitro and in vivo (**Figure 1**). The conjugated method is very easy to manipulate, and does not destroy the structure of NPs and encapsulated drugs. Importantly, any PEG-NPs can easily acquire the ability of specific tumor targeting after incubation with BsAbs. Therefore, this strategy is flexible to make PEG-nanodrugs or PEG-imaging agents possess the different specificity for the specific cancer imaging and therapy.

4. Preliminary results

project

Strategy's limiting step



For reviewers

An essential part of a research grant application

Assessing the chance of the success of the proposed project

Provide the published and unpublished results indicating progress toward their achievement

Preliminary results (many figures and tables)

Summary:

Summary the preliminary results for this project:

1. These anti-PEG Ab have been awarded 3 US patents (US6596849B1, US6,617,118, US7,320,791), 4 licenses (hybridomas) and 313 commercial technical transfers (Abs) to pharmaceutical and biotechnology companies world-wide during 2001~2012. **(Table 1)**

2. The humanization of the anti-PEG (h-αPEG) reporter did not hamper its activity and displayed high imaging specificity in subcutaneous **(Fig. 2A)** and metastatic **(Fig. 2B)** Hela tumor models *in vivo* as determined by micro-PET and optical imaging[22].

3. Large amount (mg/L level) of BsAb are produced from BALB/c 3T3 cells. **(Figure 3)**

4. BsAb show the bifunctional specificity to HER2+/EGRF+ tumor cells and mPEG-NPs (Liposome, Micelle, AuNPs, FeOdot and Qdot). **(Figure 4)**

5. A one-step mix of different mPEG-NPs (Lipo-DOX, SPIO, AuNP, QD…) with BiAb will increase the specific targeting of mPEG-NPs to target $HER2^{+}$/$EGRF^{+}$ tumor cells. **(Figure 5)**

6. The specific targeting of αHER2-Qdot to HER2+ tumor cells was detected by confocal microscopy. **(Figure 6)**

Help reviewer easy to understand your solid data

說服reviewers "this idea is working"

Give me $$$$

否則" 肉包子打狗!

Research Design and Methods

- Experimental design

  Based on our promising results. The design should follow the specific aims and test the hypothesis.

Use flowchart, figures or tables

（易懂）

Research Design and Methods

40 %

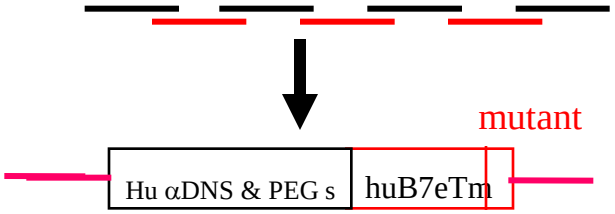
Overall strategy

1. Determining the framework of humanized Ab

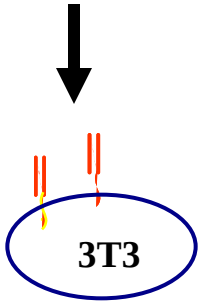
NCBI/BLAST

Vector NTI Suite8-AlignX

2. Assemble the humanized Abs by overlap PCR

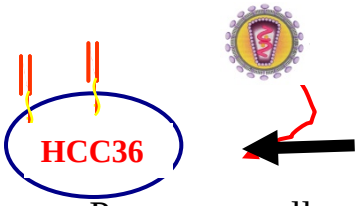


3. Construct membrane-Ab reporter genes



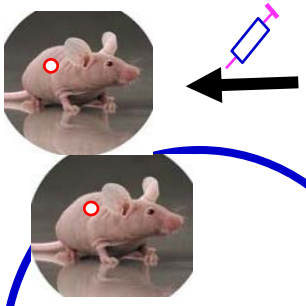
4. The expression and activity of reporter genes

5. Retro-huDNS&PEG

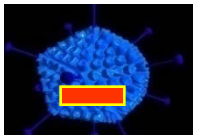


Permanent cells

6,8. Noninvasive imaging of gene expression in vivo



Dependent on probes



7. Ad-huDNS & PEG

1. Construct Ad-huDNS&PEG receptors
2. Examine the expression and activity of Ad-receptors

Figure > Word

（看圖說故事 易懂）

1.
2.
3.
4.

Research Design and Methods

NSC

研究方法、進行步驟及執行進度。請分年列述：
1. 本計畫採用之研究原因與方法。
2. 預計可能遭遇之困難及解決途徑。
3. 重要儀器之配合使用情形。

實驗步驟 1, 2, 3, 4…

(Step by step leading to your goal)

1. 主題……

原因：為何你要做這實驗

方法：簡潔易懂的描述

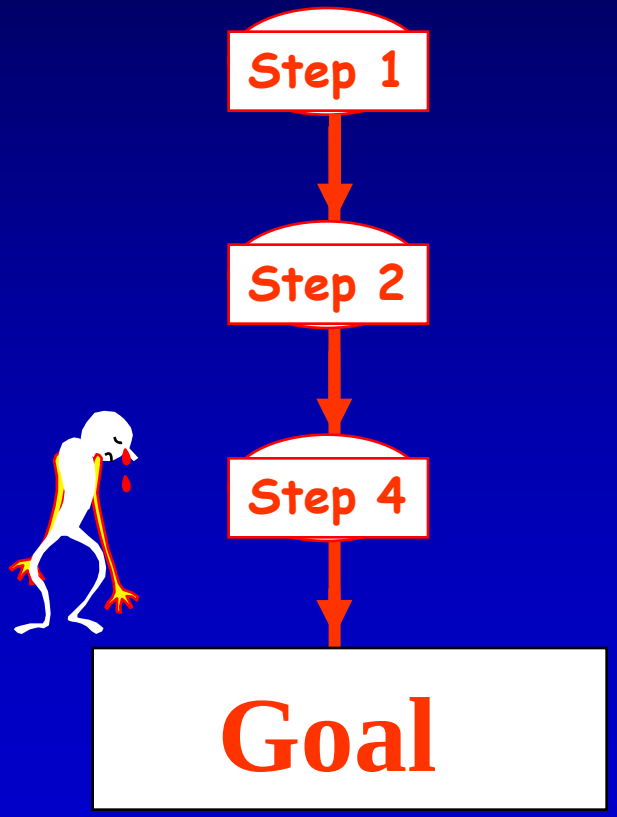
討論：預計可能遭遇之困難及解決途徑

(Alternative approaches to back up,
if results are different as you expect)

Don't simply list methods (No brain?)

Research Design and Methods

One way's plan



Backup plan

"You are Reviewer"

Which is your choice

Examine the expression and activity of humanized DNS scFab and PEG scFab antibodies

Rationale: 原因:為何你要做這實驗

It is very important to examine the surface expression and binding activity of the DNS scFab and PEG scFab antibodies to be useful for the targeting of imaging probes. Functional DNS scFab and PEG scFab antibodies will increase the sensitivity and specificity of this imaging system.

Method: 方法:簡潔易懂的描述

The surface expression and binding activity of the DNS scFab and PEG scFab antibodies will first be examined *in vitro*. BALB/3T3 cells will be transiently transfected with pLNCX/DNS scFab and pLNCX/PEG scFab to generate DNS scFab and PEG scFab cells. After 48 h, cells will be harvested and the surface expression of the scFv will be measured by flow cytometry and immunobloting of cell fractions with antibodies against the c-myc epitopes. The binding activity of membrane-scFv will be determined by flow cytometry. DNS scFab and PEG scFab cells will be incubated with DNS-FITC or PEG_{3400}-FITC. After removing unbound probes by extensive washing, the surface immunofluorescence of viable cells was measured with a FACScaliber flow cytometer (Becton Dickinson, Mountain View, CA)

Discussion: 討論:預計可能遭遇之困難及解決途徑

In our previous results, some scFv have been fused to extracellular and transmembrane domain of CD80 to anchor the scFv on the cell surface including: Anti-CTLA4 (from hamster), anti-4-1BB (from rat), anti-DNS hapten, anti-CD28, anti-phOx hapten (from mouse) and so on. All scFv antibodies can be highly expressed on the cell surface and retained antigen-binding activity. These results supported that this B7 anchor domain is a good candidate for the efficient translation of functional proteins to the cell surface as reporter gene.

Anticipated Results

預期完成之工作項目及成果。請分年列述：
1. 預期完成之工作項目。
2. 對於學術研究、國家發展及其他應用方面預期之貢獻
3. 對於參與之工作人員，預期可獲之訓練。

State clearly why good results will be expected (previous results, expertise..)

Perspectives

paradigm shifts;
scientific breakthroughs;

new technologies
for 智財權 and 技術移轉.

Do not exceed one page.

完成本計畫
預期成果
值得”200萬“

Time Table:

First year:
1,2,…..

Second year:
1,2,…..

Third year:
1,2,…..

First year:

Assemble and expression of functional humanized DNS scFab and PEG scFab antibodiesas as reporter gene

1. To determine the humanized antibody's framework

2. Construction and characterization of anti-DNS & PEG antibody reporters

(a). Cloning the humanized the VH and VL of anti-DNS & PEG antibodies

(b). Assemble the humanized the VH and VL of anti-DNS & PEG antibodies

(c). Construct humanized reporter genes for the efficient surface expression.

3. Examine the expression of humanized DNS scFab and PEG scFab antibodies

4. Examine the binding activity of humanized DNS scFab and PEG scFab antibodies

Second year:

The targeting of different DNS-derivatized probes will be assessed in a well-established human tumor (CL1-5, HCC36) models by different imaging systems.

1. Characterization of DNS scFab and PEG scFab in vivo

(a). Generate permanent tumor cell lines by DNS scFab and PEG scFab retrovirus infection.

(b). Demonstrate the expression, stability and activity of DNS scFab and PEG scFab transfectant cell in vivo.

2. Monitor the expression of humanized reporter in vivo by optimal DNS & PEG-probes and imaging systems

(a). Examine the specific binding of DNS & PEG-imaging probes

(b). Biodistribution of DNS & PEG-probes in HCC36 scFab tumor-bearing mice

(c). Noninvasive imaging in HCC36 scFab tumor -bearing mice by different imaging systems

Thirds year:

To estimate the efficiency and specificity of the different gene delivery pathways by different DNS-derivatized probes and imaging systems

1. Construction of the reporter gene into adenovirus expression vector

2. Demonstrate the expression and activity of Ad-DNS & PEG scFab in vitro and in vivo.

(a). Characterization of Ad-DNS & PEG scFab in vitro

(b). Characterization of Ad-DNS & PEG scFab in vivo

3. Monitor the distribution of Ad-DNS or Ad-PEG scFab in vivo by different imaging systems

(a). Monitor the distribution and expression of Ad-DNS or Ad-PEG scFab by intratumor and systemic i.v.infective pathways

(b). Monitor the distribution and expression of herceptin-Ad-DNS or Ad-PEG scFab in vivo.

Experience

老師
你在這一邊

換位子” 記得換腦袋”

學生
（作業 & 考試）

vs

老師
（改作業 & 考卷）

Paper投稿

vs

Reviewer

計畫申請者

vs

計畫審核者

知易行難

範例一

你給幾分??

請描述-聚合連鎖反應（10分）
(Polymerase chain reaction；PCR)

聚合連鎖反應 (Polymerase chain reaction)是一種體外快速擴增 特定基因或DNA 序列的方法。它可以非常省時地從少量的DNA 複製出特定的DNA 片段。PCR主要分成三個主要步驟：變性(95℃)-首先利用高溫(95℃)先將DNA 變性 (denature)成單股DNA 。黏合(Dependent on primer)-以所要複製基因片段其兩端所設計出的引子對(primers) 與單股DNA 進行黏合(annealing) 延展(72℃)-由DNA 聚合脢(DNA ppolymerase)合成另一股互補DNA。以上三個步驟經由多次循環，特定DNA 可以2n 的幾何倍數複製，而達到特定基因放大的效果。

6 分

原因:讓我看得很累!

範例二

請描述-聚合連鎖反應（10分）
(Polymerase chain reaction；PCR)

聚合連鎖反應 (Polymerase chain reaction)是一種體外快速擴增 特定基因或DNA 序列的方法。它可以非常省時地從少量的DNA 複製出特定的DNA 片段。

PCR主要分成三個主要步驟：

1. **變性(95℃)**-首先利用高溫(95℃)先將DNA 變性 (denature)成單股DNA 。
2. **黏合(Dependent on primer)**-以所要複製基因片段其兩端所設計出的引子對(primers) 與單股DNA 進行黏合(annealing) 。
3. **延展(72℃)**-由DNA 聚合脢(DNA ppolymerase)合成另一股互補DNA。

以上三個步驟經由多次循環，特定DNA 可以2n 的幾何倍數複製，而達到特定基因放大的效果。

範例三

請描述-聚合連鎖反應(10分)
(Polymerase chain reaction；PCR)

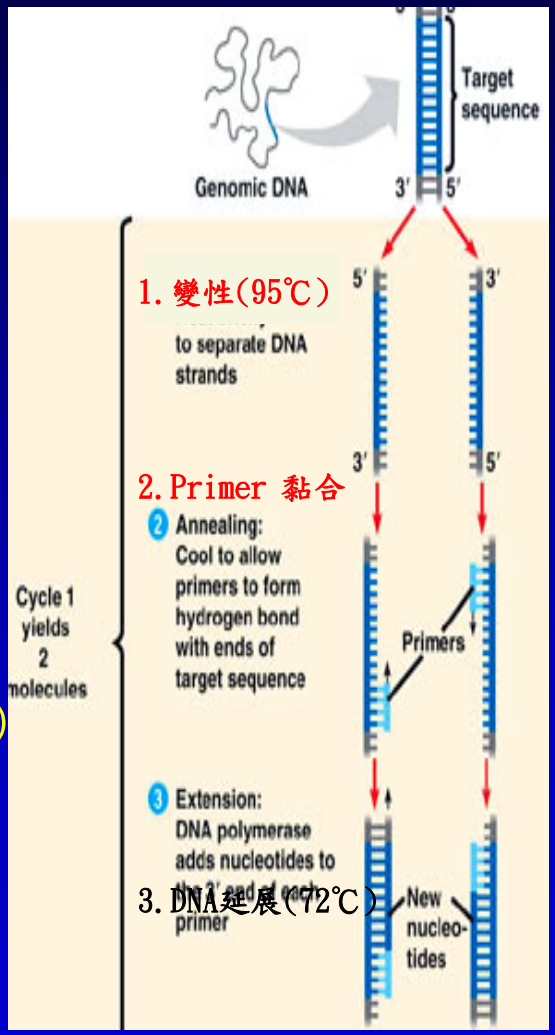
PCR特性:

一種體外快速擴增 特定基因或DNA 序列的方法。它可以非常省時地從少量的DNA 複製出特定的DNA 片段。

PCR主要分成三個主要步驟：

1. 變性(95℃)-首先利用高溫(95℃)先將DNA 變性(denature)成單股DNA 。
2. Primer黏合(Dependent on primer)-以所要複製基因片段其兩端所設計出的引子對(primers) 與單股DNA 進行黏合(annealing) 。
3. DNA延展(72℃)-由DNA 聚合脢(DNA ppolymerase)合成另一股互補DNA。

以上三個步驟經由多次循環，特定DNA 可以2n 的幾何倍數複製，而達到特定基因放大的效果。



Experience

“換位子” 記得換腦袋”

“寫計畫” 記得換腦袋”

（別忘了，你是在這邊!）

計畫申請者 ⟷ vs ⟷ 計畫審核者

Paper投稿 ⟷ vs ⟷ Reviewer

知易行難

Experience

臨時抱佛腳（無法寫出完善體貼人的&計畫)/通病

主持人撰寫期 >3 weeks

以自我研究為思考中心的”計畫盲點”（我講這麼清楚你怎麼還聽不懂）

寫出能說服自己的計畫（>200萬)才有機會說服審查者

Reference要用”Endnote” Reference不一、計畫段落 中英不一是大忌（不用心）

別高估審查者能力（你我大家都曾是審查者??)

Experience

Peer-reviewers.

專業的 (?)

很忙沒時間的

挑剔的

沒耐心的

讓他看不懂計畫 是你不用心

但他卻決定了你的生死

你計畫過不過跟他沒關係的

How do you 說服 them to pass your project?

寫計畫-最高指導原則

“體貼Reviewers”

To help reviews is to help yourself !

Reviewers是裁決者

寫出讓Reviewer可以看得很舒服的計畫
（讓他不需花太多時間 就可了解你的計畫）

“十分鐘是關鍵”

(圖文並重*****)

讓他们(reviewers)能看出你寫的計畫的體貼與用心與計畫價值

讓他感到
讓你的計畫不通過-他會良心不安

你寫的計畫
夠用心嗎?
Reviewer十分鐘看得懂嗎?
能感動人心嗎?
與你提出的經費等值嗎?

看我的計畫 像看漫畫一樣輕鬆??

都是自己的錯

千錯萬錯都是別人的錯??
Reviewer不專業? 不懂我領域?
大老分走錢?私相授受?

.....

仔細想一下
"事實上都是自己的錯"

有用心寫計畫嗎?(>3 weeks)
計畫十分鐘看得懂?
有體貼reviewer?(Figure…)
為何reviewer不欣賞我計畫
計畫夠創新嗎?
.....

成敗論英雄

虛心受教 自我檢討

對症下藥

再戰

怨天尤人；審查者不專業& 有成見；太嬌傲……於事無補

確實檢討自己 那裏出問題

體貼reviewers 用心展現計畫

（創新性 邏輯性 價值性 整體性 體貼性……）

Get a Grant Successfully

Thank You For Your Attention

Lu Lab.

Post-Dr. 3人
助理 2人
博士生 8人
碩士生 9人

大學專題生 31人

大二生13人

大三生10人
(2人直升五年學碩士)

大四生8人
(4人留下念碩士)

Successful grant applications begin with

"good idea."

原創性

Innovation:

Does it employ **novel concepts, approaches, or methods**?

Does it **challenge existing** paradigms or

develop new methodologies?

Paper review（讀書會）、研討會/Poster 、跨領域實驗室討論…

To induce a Good Idea/Hypothesis (1)

1. Journal club/Paper review/讀書會/23y

30人Journal club/兩組/15人一組

利用中午吃飯喝咖啡時間

每人每兩星期貢獻一篇

每篇paper講解~5分鐘

(Why? How? Result? Conclusion)

每星期可輕鬆聽~15篇papers

一年15 x 52= 780 papers （x 0.8=724 papers）

聽不懂/一年
聽懂/再一年
參與討論/又一年
New idea/另一年 (next step)
Novel idea /新一年

無壓力的學習 引發科學創造力

一天一英文單字

To induce a Good Idea/Hypothesis (2)

2. 參加研討會&欣賞Poster（心情輕鬆 靈門開）

3. 主動參與定期研究（含跨領域或研究群)討論會
(Discussion…….其他研究者? 學生?)

營造自己 無壓力的學習情境　引發自己科學創造力

Good idea往往是”靈光一閃”而產生
故意/刻意去想--反而”空無一悟”

壓力可讓人做好該做的事
但好創意需要完全自由的心情去醞釀

"Roughly Good Idea "

Write them done any time

↓

Checking in literatures for similar ideas

↓

Discuss with adviser & expert
(discuss, literature search, discuss)

↓

Evolution of ideas Hypothesis

↓

Obtain **preliminary results** to support your hypothesis

"Good Idea "

是創意 非模仿

"Writing a proposal"