Pathway to Independence Award for Outstanding Early Stage Postdoctoral Fellows (K88/R00)
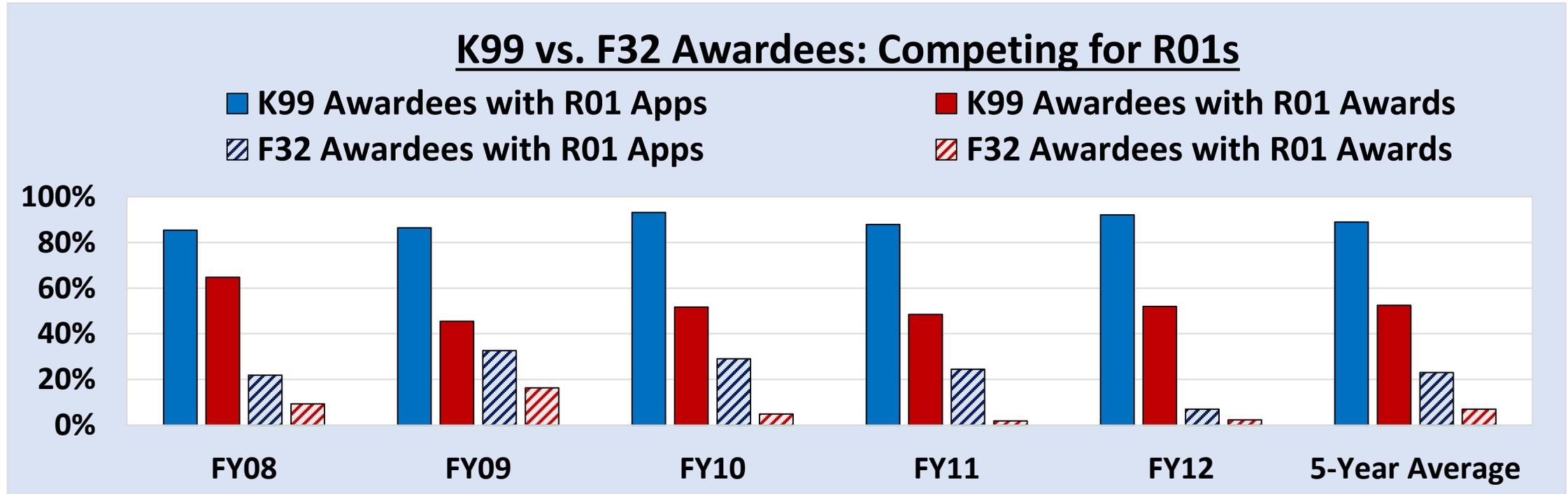
Cancer Training Branch, Center for Cancer Training

NIH NATIONAL CANCER INSTITUTE

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K Awards Are Effective for Transition to Independence

89% of NCI K99/R00 Awardees (2008 – 2012) applied for R01s, 52% succeeded

K99 vs. F32 Awardees: Competing for R01s

- ■ K99 Awardees with R01 Apps
- ■ K99 Awardees with R01 Awards
- ▨ F32 Awardees with R01 Apps
- ▨ F32 Awardees with R01 Awards

Categories: FY08, FY09, FY10, FY11, FY12, 5-Year Average

- ■ K99 is successful but doesn't meet the needs of early-stage postdocs who can transition to independence early

- ■ The F32 fellowship serves early stage postdocs but has been overtaken by the K99 as a direct pathway to independence

A New Transition Award is Needed for Early-Stage Postdocs

- **A significant number of outstanding early-stage postdocs, mostly from data, population and behavioral sciences, get tenure-track positions after 1-2 years of postdoctoral training**

- **They are not competitive for current K awards, which target those with 4-8 years of research experience and a substantial publication record**

- **They are therefore disadvantaged compared with peers who had K transition awards**

  - No protected time from teaching

  - No assurance of a competitive startup package

  - **Takes longer to get first R01 (~6 yrs) than K99/R00 awardees (~3 yrs)**

Two Discipline-Specific RFAs

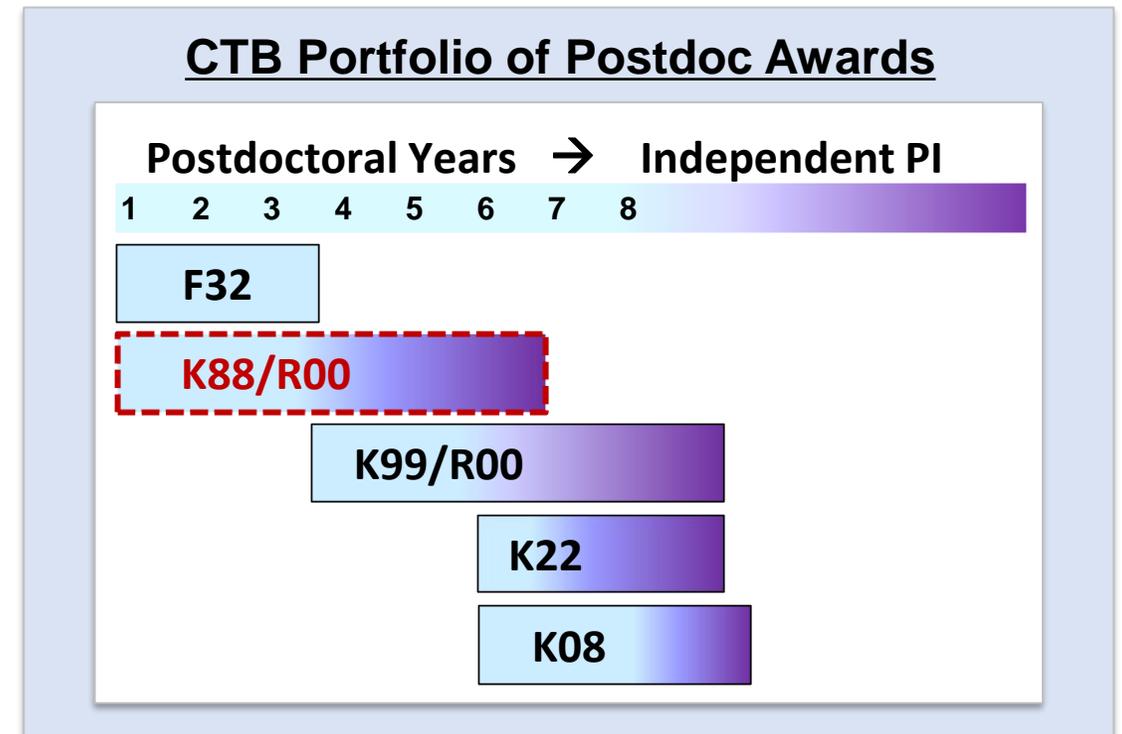- **Population and Behavioral Sciences (PBS), 8 awards/year**

  - Cancer control research to understand the causes and distribution of <u>cancer in populations</u>, to support the development and delivery of effective interventions, and to monitor and explain cancer trends

  - Includes behavior, healthcare delivery, surveillance, health disparities, and epidemiological/biostatistical research

- **Data Science (DS), 8 awards/year**

  - An interdisciplinary field of inquiry in which <u>quantitative and analytical approaches, processes, and systems are developed and used</u> to extract knowledge and insights from increasingly large and/or complex sets of data

  - Includes cancer informatics, genomics, precision oncology, data integration and visualization, systems biology, artificial intelligence and machine learning

  - Open to epidemiology & biostatistics PIs *only if they are developing analytics*

Goals of the New Transition Award, K88/R00

- **Support the transition to independence of those who can get tenure track positions sooner**
  - Bonus: further reduce the time between independence and their first R01

- **Establish a primary pipeline for future NCI PIs with individual K Awards**
  - Establishes NCI's individual K Award portfolio as the primary pipeline for transitioning to independence
  - Gives NCI more control over the supply of future PIs by adjusting the number of K awards
  - Highlights a path to success for trainees interested in pursuing independent cancer research careers

CTB Portfolio of Postdoc Awards

Postdoctoral Years → Independent PI

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

F32

K88/R00

K99/R00

K22

K08

Key Features of the K88/R00

- **Eligibility** – outstanding postdocs with no more than 2 years' research experience

  - Postgraduate clinical training not counted against the 2-year cap

  - Non-US citizens may apply

- **Institutional Nomination Letter** – required

  - Affirm PI's readiness to transition and commit to supporting the PI's search for a tenure track position no later than one year after the award

  - Describe the nominee selection process

    - Limit # of nominees per institution (DCCPS RPGs now support 175 institutions)

- **R00 phase at a different Institution**– Strongly encourage the R00 phase to be conducted at an institution different from the K88 phase

- **Dual Phase Transition Award** – up to 2 years' support for the mentored phase followed by 3 years funding for the independent phase

Strategic Elements of the RFAs

- **Review criteria to address recommendations made by Alberts, Hyman, Pickett, Tilghman, and Varmus in** *Science,* 2018. **360** (6390):716-718

  - Applicant's readiness to transition within two years

  - Publications from postdoctoral training are not required

  - Evaluate creativity and potential of research to launch and sustain a career rather than extensive preliminary data

  - Career development plan that prepares the applicant for independent research career

- **Applications to be reviewed by a K88-specific SEP**

  - Early-stage postdocs do not compete well with later-stage applicants for K awards, due to their relatively lower postdoc productivity

  - One Receipt Date per year

Budget and Period of Support

- **RFAs to be issued annually for 5 years, beginning in FY19**

  - Anticipated # of applications: ~100 per year total for both RFAs

  - Anticipated # of awards: 16 per year (8 per RFA)

  - Provide Salary, Fringe Benefits, and Research Support

Cost per Awardee by Year					
	K88-Year 1	**K88-Year 2**	**R00-Year 1**	**R00-Year 2**	**R00-Year 3**
Salary	Up to $100 K	Up to $100 K			
F&A @28%	Up to $28 K	Up to $28 K			
Research Support	$30 K	$30 K			
8% Indirect Costs	$13 K	$13 K			
Total Cost By Year	$171 K	$171 K	$249 K	$249 K	$249 K

Annual Cost per Cohort of 16	
K88 Phase	$2.7 M
R00 Phase	$4.0 M

Cumulative Cost for 16 Awards

Total Cost Over Five Years, per Annual Cohort of 16 Awardees					
Award Phase/Year	FY19	FY20	FY21	FY22	FY23
K88 year 1	$2.7 M	$2.7 M	$2.7 M	$2.7 M	$2.7 M
K88 year 2		$2.7 M	$2.7 M	$2.7 M	$2.7 M
R00 year 1			$4.0 M	$4.0 M	$4.0 M
R00 year 2				$4.0 M	$4.0 M
R00 year 3					$4.0 M
Total Cost	$2.7 M	$5.4 M	$9.4 M ($4.0 M)	$13.4 M ($8.0 M)	$17.4 M ($12.0 M)
*K88 cost is paid by CCT Funds; R00 cost is paid by RPG					

Evaluation Criteria (S=short-term, M=mid-term, L=long-term)

- **Distribution of applications by RFA, institution, & clinical trials** (**S**, K88 as control)

- **Successful transition to tenure-track research positions** (**S**, K99 awardee as control)

- **Dialog with reviewers to improve the RFAs annually** (**S**)

- **Evaluate nomination limits → desired # of applications for each RFA** (**S**)

- **Elicit feedback from awardees & mentors at conferences (á la F99)** (**S, M**)

- **Productivity & bibliometrics** (**S, M, L**, unsuccessful K88 applicants as control)

- **Time to first R01 submission & award** (**M, L**, unsuccessful K88s and K99 as controls)

- **Evaluate shifts within cancer disciplines and expansion into other research areas** (**M, L**, K99 as control)

- **Promotion & tenure outcomes, # of RPG submissions & awards** (**L**)

Long-Term Goals of K Portfolio

- **Offer a cohesive K portfolio**

  - Focus is the transition to independence

  - Target trainees by degree type & career stage

  - Align with CTB's mission to support training for all areas of cancer research

- **Eventually merge K88 RFAs and include all cancer disciplines**

  - Allow time for population, behavioral, and data sciences to establish strong K88 roots

  - Support the stars from basic/translational/clinical fields who are not well served by K99

    - Reduce their time to independence & first R01

- **Balance the supply of ESI PIs from K portfolio to match extramural demand**

Why Create a New Activity Code?

- **K99/R00 is an NIH-wide brand with an established target audience**

    - CTB wants to attract a different audience (early-stage postdocs) while leveraging the power of the R00

- **Establishing a K88 brand provides visibility to early-stage postdocs who seek independent research careers**

    - Creates an effective marketing tool

- **K88 (but not the K99) can redirect early stage postdocs from the F32 path**

    - K awards have overtaken the F32 as a direct route to independence

- **New K88 activity code allows us to easily track outcomes**

    - Reducing the time to 1st R01, age at 1st R01, shifts in scientific disciplines

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CTB's Current Individual K Portfolio

~95% of current K portfolio applicants have 3 or more years of postdoc experience at the time of application

K08: For clinician scientists at all career stages; 95% have 5+ years post-degree experience

K22: 2- 8 years postdoc research experience; 95% have 5+ years post-degree experience

K99/R00: Up to four years postdoc research experience (as of 2014), 95% have 3+ years post-degree experience

R01 Grants by NCI K and F32 Awardees FY 2008 - 2012